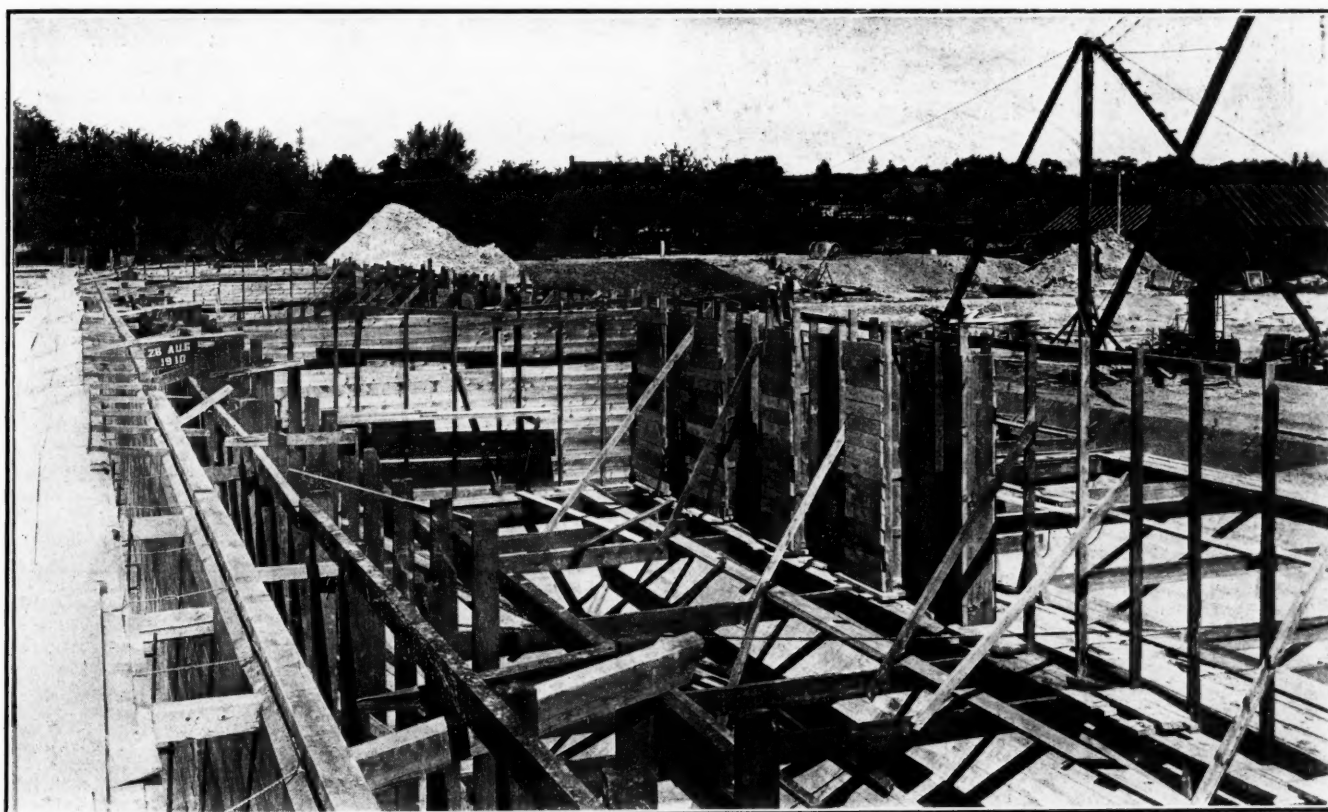


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SEDIMENTATION TANKS UNDER CONSTRUCTION
Inclined bottoms completed; forms for vertical side walls being erected

SEWAGE DISPOSAL SYSTEM OF TORONTO

Screening and Sedimentation, Followed by Discharge Into Lake Ontario—Deep Tanks, Similar to Dortmund—
Five Thousand Feet of Five-Foot Outlet — Report of Experts

Paper before American Society of Municipal Improvements by C. H. RUST, City Engineer

TORONTO, up to the present time, has poured its sewage into the bay, and, while the question of disposing of sewage at one central point has been before the City Council for many years, and a number of reports have been made by different engineers, all of which reports advocated the disposal of the crude sewage into Lake Ontario, at points varying from four to nine miles east of the water works intake pipe, it was not until 1908 that the sum of \$2,400,000 was voted to proceed with the construction of these works, and it was decided, in view of plans being adopted to filter the water, that the sewage could be safely deposited into Lake Ontario at a distance of about four and three-quarter miles east of the intake pipe.

There are two interceptors. Beginning at the screen house

near the sewage tanks the high level interceptor will extend westerly for a distance of eight miles. The sewer is circular in form throughout; its maximum size is 9 feet 6 inches in diameter and the size gradually decreases to a minimum diameter of 3 feet 6 inches. This sewer will collect practically all the sanitary or dry weather flow of sewage which can be carried to the disposal works by gravity.

The low level interceptor, commencing also at the screen house and pumping station, extends for a distance westerly of five and a half miles and varies in size from a diameter of 5 feet 6 inches to an egg-shaped sewer 2 feet 9 inches x 4 feet 3 inches.

The rate of fall of these sewers is such as to give us a mini-

imum velocity of well over two feet per second under present conditions, with a maximum velocity in the neighborhood of 4 feet per second.

The sewage carried to the disposal works by the low level interceptor is required to be pumped a height of about 20 feet.

The disposal works, which are situated in the east end of the city, a few feet above lake level, are intended to furnish for the sewage a partial treatment consisting of screening and sedimentation. A large building is to be erected west of the sewage tanks containing the screens for both high and low level interceptors, four centrifugal pumps, electrically driven, (having a combined capacity of nearly 100 cubic feet per second); an auxiliary gas engine, generator, etc.; and a sludge



BOTTOM OF TANK READY FOR CONCRETING

well, through which is drawn all the sludge from the sedimentation tanks. The sludge is pumped from this well by means of two 6-inch centrifugal pumps and carried through pipes to points on the neighboring marsh, which will be enclosed for the purpose. It is intended that the sand pump will work in conjunction with the pumping of the sludge in order to obviate any nuisance. The screens are to be of half-inch bars having half-inch spaces between them, and will be cleaned by a mechanical device operated by electrical power. Three bucket conveyors will be placed in front of the screens to remove such material as gathers in front of the screens and which cannot be removed by the rakes. This building will be equipped with two cranes, one in the screen chamber and the other in the pump chamber, for the purpose of handling the machinery, etc.

The sewage from the low level sewer, after passing through the screens, is pumped into a channel which conveys both the high level and low level sewage to the tanks.

The sewage tanks are somewhat after the design of the "Dortmund" tank, modified to suit the conditions of this city, and were designed by Mr. John D. Watson of Birmingham, England, one of the consulting engineers. The tanks are constructed of concrete—reinforced where necessary—and are each 100 feet long and 25 feet wide. The upper parts of the four side walls of the tanks are vertical, but for the lower 12 feet the four sides converge on 45 degree slopes. The bottom of each tank is divided into four hopper shaped compartments by means of slopes placed at an angle of 20 degrees from the horizontal. At the bottom of each of these compartments is a valve which is opened and closed by a stem reaching above the roof of the tank. This valve is connected to the cast-iron pipe which is the outlet for the sludge from the bottom of the tanks. The sewage from the screen house is distributed among these tanks by the main inlet channel and its branches.

The present scheme embraces the construction of 24 tanks. These tanks are placed under one roof, having two tanks lying end to end in one direction and 12 tanks side by side in the other.

Inlet and outlet branches of the main inlet and collecting channels are placed alternatively between the sets of tanks. At the side opposite to that on which the main inlet channel is placed is the main collecting channel. This conducts the tank effluent to the outlet chamber, from which it is discharged into the effluent carrier. The height of liquid in the tanks is

controlled by movable weirs between tanks and collecting channel.

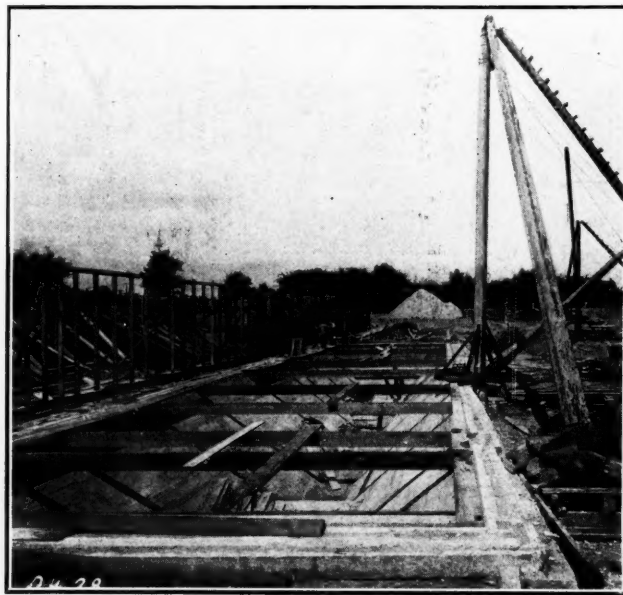
The effluent carrier is a 60-inch circular pipe, of which about 1,800 feet is to be constructed in reinforced concrete and the balance of 3,100 is a steel pipe, the total length being about one mile. The concrete pipe, while somewhat cheaper in first cost, is not nearly as satisfactory to lay as the steel pipe. It is constructed in 24-foot lengths, each section weighing 16½ tons. Cast metal flanges drilled for bolts are supplied at the ends, forming a part of the pipe. The pipe is lowered into place and bolted together by divers. The steel pipe, which is much more satisfactory to put in position and is absolutely free from danger of fracture, is built in 50-foot lengths. The contractor is laying two sections at a time, bolted together.

For the purpose of giving alignment, platforms were built on piles in the lake at each change of grade. For the control of the flow of the sewage at the disposal works, stop gates and penstocks are arranged in such a manner as to permit shutting off any tank or series of tanks; or the sewage can be discharged direct into the effluent carrier and the tanks emptied into the sludge well. A storm overflow into the bay is also provided at the entrance to the tanks.

At the time of writing, the sewage disposal works and high level interceptor are about one-third completed and work is being commenced on the low level interceptor. It is expected that a portion of the system will be in operation next summer.

Mr. John D. Watson, chief engineer of the Birmingham Drainage Board, England, and Mr. Rudolph Hering of New York, Consulting Engineer, were consulted with regard to the general schemes of sewage disposal in February, 1909, and the following are the conclusions they arrived at:

"After carefully considering the problem which you have put before us, we believe that we can best present our report in the form of answers to the questions contained in the appended letter, addressed to us by Mr. C. H. Rust, and to follow same with our general recommendations:



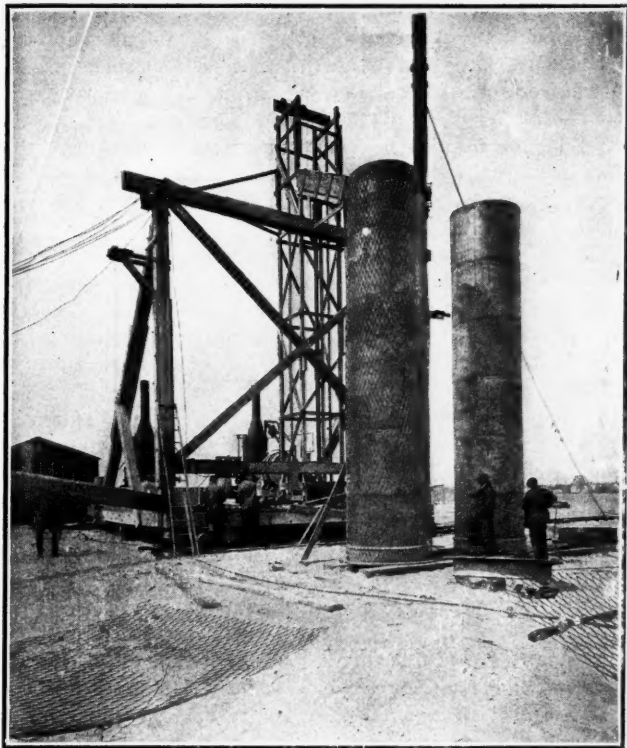
CONCRETE BOTTOMS COMPLETED

Question 1.—In your opinion, would any fouling of the shore in the neighborhood of the outfall works occur?

"With the design presented to us and with such modifications as are suggested hereafter, it is our opinion that the sewage of Toronto could be disposed of satisfactorily, not only without fouling the shore at any point, but in a manner that will be unnoticeable on the lake itself.

Question 2.—Would it be possible, after careful screening of the sewage and making the provision for tank treatment, to use the resulting sludge with safety for filling purposes? If not, what method would you suggest for its disposal?

"We hold the opinion that the plans of the tanks proposed by the City Engineer should be modified so as to ensure greater



CONSTRUCTING REINFORCED PIPES

"Even without special ventilation no nuisance will arise from the tanks, if they are properly constructed and operated; but, as an extra safeguard, provision will be made to ventilate them by means of an electrically driven fan fitted with a suitable exhaust pipe.

Question 4.—Would those residents in the immediate neighborhood of the works, or persons using Queen street as a highway, experience any nuisance from odors from the existence of tanks upon the site proposed?

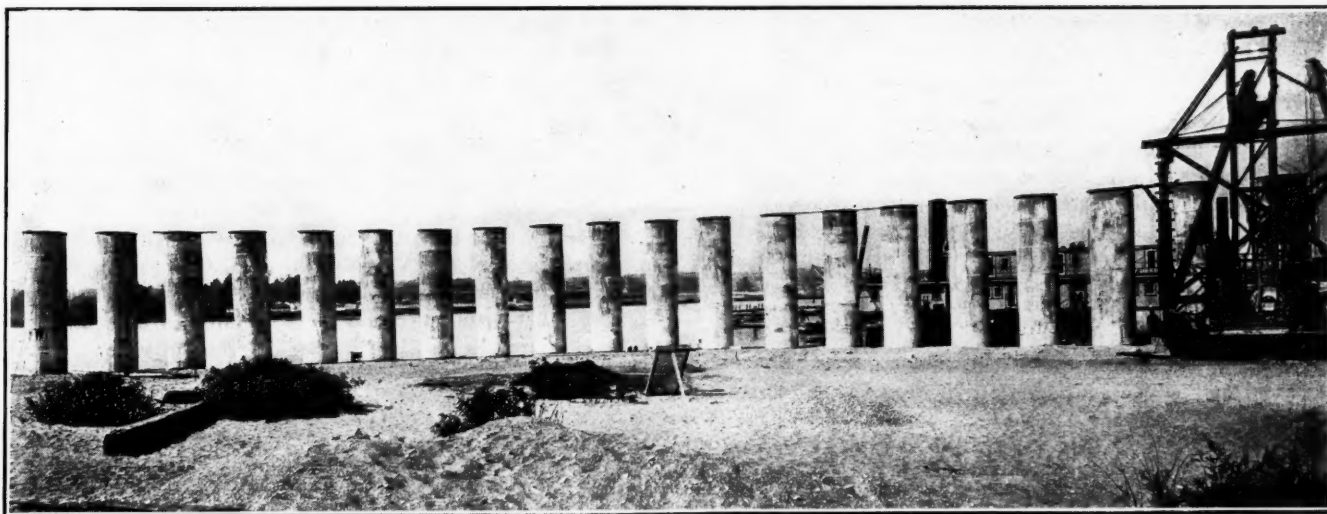
"Residents in the neighborhood of the tanks will experience no odor from them, and if the tanks are covered with earth and planted with shrubs and flowers the site would even be rendered pleasantly attractive.

"If the sludge were removed from the tanks and deposited in proximity to them in the ordinary way, we think residents might have occasion to complain; but by making the only outlet for sludge at Ashbridge's Bay, opposite Cherry Street, this possibility is entirely obviated. The tank will not be more noticeable to a person passing it than would be a flush tank or chamber in a large sewer under a leading thoroughfare.

"In view of the results of additional trial holes, which we have had made, we advise that the tanks be located close to the shore line, south of Eastern Avenue, where we consider that there is sufficient area of suitable land for their construction.

"We recognize the validity of the objections to having the tanks placed on a site that would entail an alteration of the line of a thoroughfare from the center of the city to a beautiful undulating district.

"The position of the outfall sewer meets with our entire approval, but we think the sewer should be extended at least



SIXTY-INCCH REINFORCED CONCRETE PIPES SEASONING

efficiency in the elimination of solids. Septic action is bound to take place in the sewage before it reaches the tanks, and to that extent the proposed tanks will contain septicised sewage. But we suggest a provision for cleansing each pocket of the tank daily by utilizing electric current to pump the solids to the west end of the Ashbridge's Marsh.

"If this course is followed, the sludge will not be exposed to the atmosphere until it reaches the western end of Ashbridge's Bay, where it will be mixed with the dry refuse and spoil which is being deposited there to fill up the marsh. This can be done, not only with safety but with advantage, as in our experience city refuse is generally combustible, and when ignited on rubbish heaps frequently gives rise to nuisance. Admixture with wet sludge will obviate this, and if the admixture is not deposited in layers exceeding two feet in thickness at one time nitrifying bacteria will very speedily reduce the whole to an inoffensive substance.

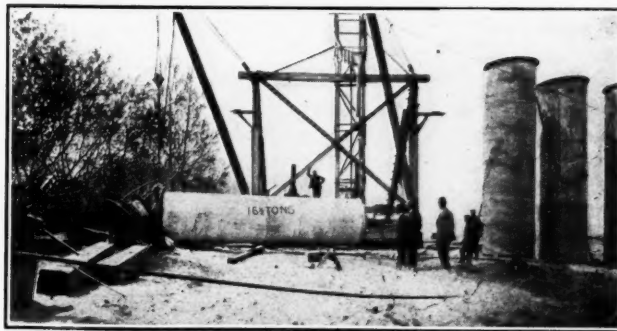
"We are of opinion that if ordinary care is exercised no offensive odor will be perceptible more than a short distance from the site of the deposition.

Question 3.—Provided proper ventilation is used with covered tanks, would there be any nuisance from odors?

another 1,500 feet further into the lake, so as to insure a discharge into deeper water.

Question 5.—Having regard for the large body of water into which the effluent is to be discharged, do you think that the proposed method of disposal could be operated successfully and satisfactorily?

"Sewage is finally purified by oxidation, whether this be on



HANDLING CONCRETE PIPES

land or in water; on land, by percolation through beds of sand, or beds of stone; and in water by oxidation accomplished by dissolved oxygen.

"We are of the opinion that the large body of water into which the effluent is to be discharged will successfully and satisfactorily dilute and dispose of the sewage effluent.

"It is imperative that no visible particles of suspended matter should be allowed to reach the lake. The effluent, therefore, will consist of a liquid, the polluting matter in which will be mostly in solution, and when issuing at the outfall will be discharged in about 30 feet of water, and at least 3,500 feet from the lake shore.

"We recommend that the sewage be made to issue from a number of small openings in the outfall sewer, extending over a length of several hundred feet, so that, instead of discharging the effluent at one point, it will be discharged through many openings to facilitate a high degree of dispersion and dilution.

"We are entirely satisfied that the proposed location of the outfall will not injuriously affect the water supply, which fact will again be referred to below.

"Under any circumstances the outfall sewer should be located in the position shown on the plans, namely, about 3,500 feet south of the shore opposite the Woodbine and upwards of $4\frac{1}{2}$ miles from the water works intake.

Question 6.—In your opinion, do you advise the use of brick or concrete for the proposed intercepting sewers?

"We recommend the Council to construct the intercepting sewers of Portland cement concrete, having the invert lined with a single course of hard, sharp-edged, vitrified brick. This method of construction will be equally durable and less costly than a sewer built entirely of brick.

Question 7.—In your opinion, is the proposed adoption of water filtration advisable and necessary, and will it completely safeguard the water supply of the City of Toronto in connection with the proposed sewage disposal works?

"It is our opinion that the proposed adoption of water filtration is both advisable and necessary, and that it will completely safeguard the water supply of your city, not only with reference to any possible pollution from the proposed sewage disposal works, but also from any pollution in the neighborhood of the intake, due to excursion boats or other shipping. It will also prevent the water, made roily by the stirring up of the lake shore bottom by wave action during high winds, from reaching the city mains in a turbid condition.

"After ten years' consideration of the subject, the Royal Commission of Sewage Disposal came to the conclusion that the conditions of different cases vary to such an extent that each case should be considered on its own merits. In dealing, therefore, with the problem which you have placed before us, we have endeavored to give due weight to local circumstances. We are perfectly satisfied that the plans of the work as proposed, amended as we have suggested, will not only effectually dispose of the sewage of your city, but do it without danger to health, without nuisance at any point and for a reasonable outlay of money, therefore, we recommend their adoption."

STREET FLUSHING TESTS

THE Department of Street Cleaning of New York City has just made public the figures of a series of tests on street flushing made during August of this year. Tests were made with hose flushing and with two flushing machines. The pavements were divided into three classes, and the tests classified as A, B and C, accordingly as they were made on the streets between Broadway and 7th avenue, Waverly place and 14th street; those between Broadway and 7th avenue, 14th street and 24th street; or those between 4th and 6th avenues, 24th and 34th streets. Tests were continued for five days on each of these sections. Water used on class C pavements was metered, and the same average figures for capacity of tanks and discharge through hose per minute were applied to the other two classes.

In the first area, from 30,386 to 34,286 square yards of pave-

ment was flushed per day with hose; from 24,199 to 28,432 on the second area, and from 17,965 to 30,498 on the third area. The square yards flushed per day by one flushing machine varied from 58,663 to 67,407 on the first class of pavements; from 56,419 to 59,275 on the second class, and from 45,086 to 61,307 on the third class. The other flushing machine flushed from 76,706 square yards to 82,273 on the first class of pavements; from 67,183 to 84,785 on the second class, and from 37,964 to 61,307 on the third class.

The amount of water used per great square in hose flushing varied from 1,338 to 1,647 gallons on class A pavement; from 1,619 to 2,129 on the second class; and from 1,394 to 1,953 on the third class. One of the flushing machines used from 429 to 572 gallons on the first class of pavements; from 512 to 675 on the second class; and from 490 to 736 on the third class. The other flushing machine used from 318 to 378 gallons on the first class of pavements; from 296 to 364 on the second class; and from 457 to 704 on the third class. The average amounts of water consumed per great square cleaned were as follows: Fire hose: A pavements, 1,500 gallons; B pavements, 1,795; C pavements, 1,699. The first machine: A pavements, 504; B pavements, 588; C pavements, 642. The other machine: A pavements, 343; B pavements, 327; C pavements, 571.

It is seen from these figures that the amount of water required by the flushing machines was approximately only one-fourth to one-third of that required for hose flushing; and the amount of area cleaned per day was between 2 and 3 times as much. As a great square is 10,000 square feet, or approximately 1,100 square yards, it appears that the amount of water required for hose flushing was about $1\frac{1}{2}$ gallons per square yard, while that required for machine flushing was from one-third to one-half gallon per square yard.

INSPECTING PIPE SEWERS

SEWERS, like other work constructed by contract, should be thoroughly inspected by a municipal official or agent before being accepted by a city, although such thorough inspection is too often neglected. Also, all works should be inspected at intervals of a few weeks or months, depending upon the experience as to stoppages and other failures to efficiently perform their functions. In the case of small pipe sewers such inspection must be made from the manholes. The more common method of doing this is to use two mirrors, one being held upon the surface and used to reflect sunlight to the second which, held by the inspector in the bottom of the manhole, reflects the sunlight to the interior of the sewer. There are several objections to this, one being that it is not applicable on cloudy days; another, that it requires the inspector to assume an awkward and back-tiring position; moreover, the illumination at more than 100 feet from the manhole is generally inadequate.

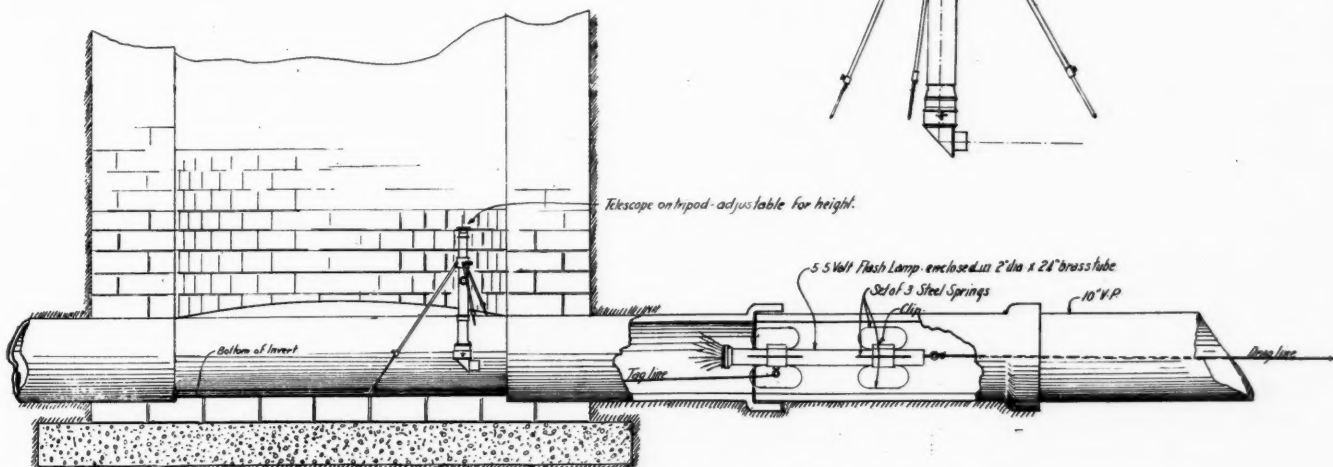
Mr. W. W. Dixon, who until recently was Superintendent of Sewers of Summit, N. J., has invented and used in that town an apparatus which apparently overcomes these difficulties. The light is furnished by a hand torch carrying a storage battery similar to those which can be purchased at any electric novelty store except that a larger storage battery is employed. This torch is provided with springs just sufficiently strong to support it in position in the center of the sewer. Mr. Dixon proposes to substitute for the dry battery a storage battery located in the manhole and connected to the light by a twin wire, which wire could also be used in place of the cord employed for drawing the torch through the sewer. This twin wire, or a special cord, is attached to the dark end of the torch, by which it is drawn backward through the sewer from one manhole toward a second. A steel tape graduated to 5-foot intervals is also attached to the torch and is paid out from the former manhole, at which the inspector stands, thus enabling him to determine at any time the distance of the torch from that manhole, and thus locate any obstruction or defect which may be

revealed. The front of the bulb of the lamp is silvered so as to in some degree obviate the glare in the eye of the observer.

To avoid the necessity of the inspector's getting down upon hands and knees to look into the sewer a telescope is provided with a power of about 15 diameters, furnished at the object end with a right-angle prism so set as to refract to the eyepiece rays received at right angles to the axis of the telescope. This telescope is mounted upon a tripod with legs adjustable as to length, two of which rest upon the benches at the sides of the manhole and the third in the invert of the sewer. The last is furnished with a rack and pinion to permit accurate adjustment of the telescope. In using, the telescope is set vertical with the prism practically in the axis of the sewer. The telescope is provided with a gauge which is set to read zero when the telescope is exactly vertical, and by setting this gage at the grade of the sewer which is to be inspected the line of sight will coincide with the axis of the sewer. This last adjustment is perhaps an unnecessary refinement, as the observer can easily adjust the telescope from time to time with the rack and pinion so as to direct the line of sight as desired. The inventor who has applied for a patent on this appliance, has used it for detecting flaws, bad joints, seeping ground water, branch connections whose location is unknown, as well as to inspect new lines of pipe to determine their acceptability before final settlement with the contractor for the same.

INSERTING HOUSE CONNECTIONS

Mr. Dixon has also designed a method of making house connections with vitrified pipe sewers where no Y branches have been left for that purpose. In fact, we believe the Sewer Department at Summit has not recently been in the practice of leaving any such connections in new sewers in front of vacant lots, but intends to make the connections wherever it may be most convenient after the buildings have been constructed. The method employed consists in cutting a hole in the pipe where the connection is desired, this hole being made two or three inches greater in diameter than the house connection pipe. As the pipe is well bedded in the bottom of the trench there is little danger of cracking it during the cutting if ordinary care be taken. This is covered with a saddle or half-pipe which is furnished with a regular T or Y hub, which saddle is so placed as to bring the hub opening directly over that cut into the sewer shell. The outside of the sewer pipe is plastered with about $\frac{1}{4}$ -inch thickness of rich cement mortar and the saddle pressed into place. A little mortar wiped on the inside of the inlet opening seals the joint between the saddle and the pipe at this point. The saddles are made by the pipe manufacturers of salt glazed vitrified clay in the form of a double branch pipe 16 inches long, without a bell, the pipe being scored before burning and being split into two pieces after burning, after the ordinary method of preparing "split pipe." For providing a connection for 8-inch pipe a 10-inch pipe is used for the saddle.



USE OF TORCH AND TELESCOPE IN INSPECTING 10-INCH PIPE

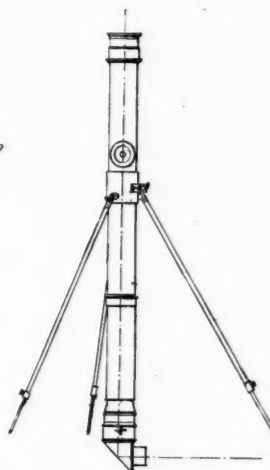
STANDARD PAVING SPECIFICATIONS

Recommended by Committees of American Society of Municipal Improvements — Brick Rattler Not Yet Perfected — Creosoted Wood Block

In 1909 the American Society of Municipal Improvements appointed a committee on Standard Specifications, with a view toward the standardization of specifications for the more common pavements, especially wood block, brick and asphalt. This committee appointed sub-committees on these three subjects and also on bituminous paving nomenclature. The committee and sub-committees reported at the convention of the society, October 12th. Each report was to a certain extent a progress report; but the committees on wood block and asphalt paving presented complete specifications which they suggested for adoption, although having in mind that it might be desirable to modify them in some respects a year from now.

The committee on brick paving is to a considerable extent similar in membership to the corresponding committee appointed by the Organization of City Officials for Standardizing Paving Specifications, and hopes to be able to present to both that organization and the American Society of Municipal Improvements at their next convention brick paving specifications which they will adopt. At present one obstacle to the preparation of standard specifications is the fact that the manufacturers are much dissatisfied with the present rattler test, and they and Prof. Orton of the University of Ohio have for some months been at work upon perfecting a rattler, and are still engaged upon the same. It had been hoped that a satisfactory form of rattler might have been decided upon before this convention, but some difficulties arose during the tests which made it necessary to conduct further experiments before the final form could be decided upon. It has been found that not only the shape and size of the rattler, the velocity and uniformity of speed, etc., affect the result of the test, but the material of which the rattler is formed and the amount of wear to which it has been subjected. The kind of iron used in the shot, also, has been found to exert a very considerable influence on the amount of abrasion—even more than the shape of the shot. It therefore seems necessary to standardize the material of which the rattler is made, and possibly even the chemical com-

Telescope showing Prism



position as well as the shape, size and amount of wear of the shot employed. The members of the sub-committee on Brick Paving were E. H. Christ, chairman; Henry Maetzel, J. B. Hittell and Prof. A. N. Talbot. The head committee on Standard Specifications consisted of Messrs. C. H. Rust, chairman; E. A. Fisher, Chas. C. Brown, Morris R. Sherrerd and Prof. A. N. Talbot. The committees are to be continued for another year with instructions to report at the next convention of the Society.

The Wood Block Pavement Committee consisted of A. W. Dow, chairman; C. D. Pollock and N. S. Sprague. The report of this committee presented complete specifications, and is given herewith in full. That of the asphalt committee will be given next week.

REPORT OF SUB-COMMITTEE ON WOOD BLOCK PAVING SPECIFICATIONS

In presenting to you the report of the Committee on Wood Block Paving Specifications we beg to say that, owing to the short time that this committee has been organized, it has been impossible to carry on any investigation on the question of wood block paving and we have, therefore, felt that we can not do better than recommend for your approval specifications drawn on the lines of those presented to the Convention for Standardization Specifications, which met in Chicago last winter. We have changed these specifications only by making some portions of them more explicit. This change has been made chiefly because the Chicago specifications were so broad that they allowed too wide a scope to interpretation.

As there is always considerable controversy on the quality of the wood, and as practically every citizen in a town constitutes himself an expert on quality and character of wood, we have thought it advisable to define rather closely the character of wood that would be acceptable.

In our specifications we have included only long-leaf pine, tamarack and Norway pine. We believe from experience that, under certain conditions, black gum wood and short-leaf pine may satisfactorily be used. As these woods require somewhat different treatment and as they cannot be recommended as suitable for universal adoption we have not included them in our specifications.

While we recommend the same oil used for impregnating the blocks as is given in the Chicago specifications, we believe that at a future date it would be advisable to broaden the specifications somewhat. The oil which we recommend is not a straight distillate product, but a mixture of a heavy distillate oil of coal tar with either a refined coal tar or coal-tar pitch. On the question of this oil we would like to go on record as stating that, from our experience and present knowledge, we believe that the oil recommended is more acceptable than any other oil yet suggested or used for the preservation of wood blocks.

Products made from water-gas tar have not as yet the confidence of the engineers, as is shown by the comments made on this subject in testimony taken in New York City somewhat over a year ago, and because of the statement in the *Bulletin of the United States Department of Agriculture, Forestry Service*, No. 112, which says:

At present, despite the apparent approximation to the composition of coal-tar creosotes by the creosotes from oil or water-gas tars, the known preservative value of the pure coal-tar creosotes makes them of greater market value.

The oil which we recommend has been proven superior to a straight distillate oil from coal tar in that it is less volatile when exposed in the block and that it remains in the pores of the wood much better. It is also a much better waterproofing agent. It also possesses very nearly if not quite as high preservative properties as a straight distillate oil and in view of the large impregnation given to wood block we believe it amply sufficient in this respect to preserve them long after the time of their being worn away with traffic.

As to the assertion that this oil is controlled by one company, we beg to state that an investigation has shown this not

to be the case; that it is easily obtained by any one not only in this country, but abroad and in Canada; and that it also has the advantage over the straight distillate oil of being cheaper in price.

As to the question of remaining in the block, it may be well for the committee to state here, in answer to criticisms that have been made lately, that experience during the past year has shown that the oil which we recommend does not ooze as readily from the block as do the straight distillate oils. We have investigated pavements where the blocks were impregnated with a very heavy straight distillate oil, as well as those in which the oil recommended by us was used. In all cases the blocks had been treated with the same amount of oil, viz., 20 pounds per cubic foot. Under like conditions it was found that the distillate oil oozed out very much more rapidly and to a much greater extent than did the oil we have recommended.

We have written specifications for laying the blocks both on a sand cushion and in a mortar bed. While the majority of the committee recommend the sand cushion, we feel that the mortar bed has given such excellent satisfaction, under certain conditions, that it should be specified as an alternative.

The specifications which we recommend require that the blocks be laid at right angles with the curb line, as this is the simplest method of laying and appears to give the best results under heavy traffic. While we do not mention it in the specifications, we know of many instances, especially on light traffic, residence streets, where blocks laid at 65 degrees with the curb line have given even better results than where they were laid at right angles with the curb.

In presenting these specifications we would like to impress upon engineers the necessity of properly handling the block after they have once been manufactured. The blocks should not be allowed to dry out before they are laid. If it is impossible to lay them immediately, they should be piled in close piles so as to prevent drying out as much as possible, and it is advisable to wet the blocks before laying so that they will be at their maximum expansion at the time of laying. This will do away to a great extent with the expansion of blocks in pavements.

We have recommended the use of 20 pounds of oil per cubic foot of wood for impregnating long-leaf pine, Norway pine and Tamarack. We believe from experience in several Western cities that it may be advisable in the future to cut down this quantity of oil to even as low as 16 pounds. This last suggestion, however, is merely made at the present time with the hope of drawing forth some remarks and criticisms.

SPECIFICATIONS FOR CREOSOTED WOOD BLOCK PAVING

Timber.—The wood to be treated shall be either long-leaf yellow pine, Norway pine or Tamarack, only one kind of wood, however, to be used in any one contract. The blocks must be cut from what is known as prime timber, namely: All timber must be sound, well manufactured, saw-buttled, all square edge, and shall be free from the following defects: Unsound, loose and hollow knots, worm holes and knot holes, through shakes and round shakes that show in the surface. In yellow pine timber the annual rings must not average less than six to the inch measured radially from the heart so as to include the greatest number of rings possible, and in no case in any one inch of this radius shall there be less than three annual rings. Wherever in any one inch of this radius there are less than four annual rings, the cross-sectional area of each resin ring shall be not less than 20 per cent of the total cross-sectional area of its corresponding annual ring. The blocks must average 80 per cent of heart wood and no one block shall be accepted that contains less than 50 per cent of heart wood.

Size of Blocks.—The blocks shall be from 5 to 10 inches long, but shall average 8 inches; they shall be 3½ and 4 inches in depth and width, according to traffic. They may be from 3 to 4 inches in width, but all blocks in one street shall be of uniform width. On streets of light traffic, blocks 3 inches in depth can be used. In no case shall the width and depth of the blocks be the same. A variation of 1/16 inch shall be allowed in the depth, and 1/8 inch in the width of the blocks from that specified.

Treatment.—The blocks shall be treated with a preservative oil complying with the specifications given below. The exact method of treating the blocks, while not being definitely described, shall comply with the following: The blocks shall not

at any time be heated to a temperature higher than 250 degrees Fahr. When treated with oil the blocks shall be completely immersed therein and the oil shall be forced into the blocks under a sustained pressure of not less than 100 pounds per square inch until the charge as a whole has absorbed an amount of oil equivalent to 20 pounds for each cubic foot of wood contained in that particular charge.

The blocks after treatment must show satisfactory penetration of the preservative oil throughout. All blocks that are in any way defective or that have been badly warped or checked in the process of treating shall be rejected.

Oil.—The oil shall be a coal-tar product, free from adulteration of any kind whatever, and shall comply with the following requirements:

(1) The specific gravity shall be at least 1.10 at a temperature of 38 degrees C.

(2) On distillation, which shall be made exactly as described in Bulletin No. 65 of the American Railway Engineering and Maintenance of Way Association, the distillate shall not exceed 2 per cent up to 150 degrees C. and 35 per cent up to 315 degrees C, the mean of three determinations to be taken.

(3) Not more than four (4) per cent of the oil shall be insoluble in hot benzol and chloroform.

The manufacturer of the oil shall permit full and complete inspection and sampling at the factory at which the oil is produced, of all materials, either crude or refined, entering into the manufacture of the finished product, as well as the finished product itself in order that the material used can be determined to be in accordance with the foregoing requirements. He shall also submit satisfactory proof of the origin of all material entering into the composition of the finished product.

Oil samples taken by the inspector from the treating tank during the progress of the work shall at no time show an accumulation of more than 2 per cent of foreign matter, such as sawdust and dirt. Due allowance shall be made for such accumulation of foreign matter by injecting an additional quantity of oil into the block.

LAYING THE BLOCK

(C) *Cushion (Sand).*—The blocks shall be laid on a sand cushion one inch in thickness spread on the concrete foundation. The sand cushion shall be struck by templates to a surface parallel to the grade and contour of the finished pavement in such a manner that when the blocks are set and properly bedded in the sand the tops shall conform accurately to the finished grade of the pavement. The sand used in this sand cushion shall all pass a $\frac{1}{4}$ -inch screen and shall be clean and sharp.

Cushion (Mortar Bed).—Upon the concrete foundation shall be spread a layer of mortar one inch in thickness and made of one part of Portland cement, of the character provided for use in the foundation, and three parts of sand. Only sufficient water shall be added to this mixture to insure a proper setting of the cement, the intention being to produce a granular mixture which may be raked to the desired grade. The mortar shall be thoroughly mixed and shall be spread in place on the foundation immediately in advance of the block laying to such a thickness that when the blocks are set and properly bedded in the mortar their tops shall conform accurately to the finished grade of the roadway. The concrete foundation shall be cleaned and swept and shall be thoroughly dampened immediately in advance of placing the mortar bed. The mortar bed shall be struck by templates to a surface parallel to the grade and contour of the finished pavement.

Laying Blocks.—Upon the bed thus prepared the blocks shall be carefully set with the fiber of the wood vertical in straight parallel courses at right angles to the curb, except that one row of blocks shall be placed parallel with the curb and $\frac{3}{4}$ inch therefrom. The space thus formed between the curb and this row of blocks shall be filled with a bituminous filler having a penetration between 30 and 40 when tested at 77 degrees Fahr. On streets 50 feet or more in width a second row of blocks parallel to the first row along the curb and $\frac{3}{4}$ inch therefrom shall be laid and the space between the two rows filled with a bituminous filler as above, thus forming a double expansion joint.

When deemed advisable by the engineer on streets for heavy traffic the row or rows of blocks parallel with the curb and the expansion joints may be dispensed with.

The blocks should be laid by setting them loosely together on the cushion coat, but no joint shall be more than $\frac{1}{8}$ inch in width. Nothing but whole blocks shall be used, except in starting a course or in such other cases as the city may direct, and in no case shall less than one-third of a block be used in breaking joints. Closures shall be carefully cut and trimmed by experienced men. The portions of the blocks used for closure must be free from check or other fracture, and the cut end must have a surface perpendicular to the top of the block and cut to the proper angle to give a close, tight joint.

After the blocks are placed they shall be rolled by a small steam roller until the surface becomes smooth and is brought truly to the grade and contour of the finished pavement. When laid on a mortar bed the rolling shall be completed before the mortar has set and all mortar that has set before the blocks are in place and rolled shall be discarded and replaced by fresh mortar.

After the blocks have been thoroughly rolled the joints between them shall be filled by sweeping with fine, clean, dry sand, all of which shall pass a 10-mesh sieve.

After inspection by the proper city officials the surface of the wood block pavement shall be covered to a depth of about $\frac{1}{2}$ inch with fine screened sand. This sand is to be left upon the pavement for such time as may be directed by the proper city official, after which it shall be swept up and taken away by the contractor.

Inspection.—The manufacturer of the blocks shall equip his plant with all the necessary gauges, appliances and facilities to enable the inspector to satisfy himself that the requirements of the specifications are fulfilled. He shall allow an authorized representative of the city to inspect all materials and all parts of the plant during the manufacture of the paving block.

(B.) After delivery upon the street the blocks shall be subjected to a further inspection and blocks that do not comply in all respects with the specifications shall be rejected and removed from the street by the contractor.

CEMENT PIPE IN BELLINGHAM

THE City Engineer of Bellingham, Wash., Mr. H. A. Whitney, informs us that that city is at present using cement pipes for storm water sewers. In contracting for these, general specifications were employed which permitted the acceptance of a number of makes of pipe, patented and otherwise. As at present used, the pipes are made in molds consisting of a cast-iron core and a two-piece cast-iron flask so made that it can be quickly bolted or unbolted. In the process of manufacture the pipe is kept in a vertical position and firmly held in guides.

The machine is so constructed that pipes varying in diameters from 4-inch to 24-inch can be manufactured with but little loss of time in changing the molds. The concrete is machine mixed, each batch being hand-measured. It is mixed dry, with only about 8 to 10 per cent of water. As it is deposited in the mold it is automatically tamped with a wood tamper running at the rate of five blows per second. Meantime the core is kept stationary but the pipe is revolved around it. This gives the inside of the pipe a surface as smooth as glass, for which reason the contractors call it "glazed cement" sewer pipe. The outside of the pipe also is smooth in appearance.

The cost of manufacture is said by Mr. Whitney to be as follows:

4-inch pipe.....	4	cts. per foot	12-inch pipe.....	25	cts. per foot
6-inch ".....	7	" " "	15-inch ".....	35	" " "
8-inch ".....	14	" " "	18-inch ".....	50	" " "
10-inch ".....	19	" " "	20-inch ".....	65	" " "

These costs are based upon the following cost of materials: Cement, \$2.30 per barrel; sand, \$1.10 per cubic yard; gravel, \$1.20 per cubic yard; labor, \$2.25 per day; foreman, \$4.00 per day.

The specifications under which bids for cement pipe were received are as follows:

SPECIFICATIONS FOR MACHINE MOLDED CEMENT OR CONCRETE PIPE

Make.—All cement pipe shall be machine molded and what is known as bell and spigot type. All pipe 10 inches and larger in diameter shall be reinforced with a wire netting or some approved method. The manufacturers to give the City Engineer a sketch of the method and sizes of the reinforcement of their different pipes.

Grade.—All pipe must be equal in all respects to the samples on record at the City Hall, no deviation allowed unless by written order of the City Engineer.

Quality.—When broken, the pipe shall appear homogeneous throughout, and be entirely free from cracks or voids, and generally uniform, showing pieces of fractured stone firmly imbedded in the mortar, where stone enters into the composition.

Composition.—The clearance between the bell and spigot must be ample to allow a proper mixture of cement mortar to be placed in the annular space thus formed. The inside diameter of the bell shall not be less than $\frac{3}{4}$ inch greater than the outside diameter of the spigot.

The following table shows what shall be the minimum dimensions of pipe, and the mixtures of sand, cement and gravel used.

Table of Mixtures and Sizes for Cement Pipes.				
Size	Thickness	Cement	Sand	Pea Gravel
6 inches	$\frac{7}{8}$ inches	One part	Two parts	None
8	$1\frac{1}{8}$	" "	" "	" "
10	$1\frac{1}{4}$	" "	" "	" "
12	$1\frac{1}{2}$	" "	" "	" "
15	$1\frac{3}{4}$	" "	" "	" "
18	2	" "	" "	One part
21	$2\frac{1}{4}$	" "	" "	" "
24	$2\frac{1}{2}$	" "	" "	" "
30	3	" "	" "	" "

Cement.—The cement shall stand the prescribed test of the American Society of Civil Engineers.

Sand.—The sand shall be clean, and not more than 25 per cent shall pass over a No. 40 screen, and all shall pass through a No. 4 screen.

Gravel.—The gravel used shall be clean and not less than $\frac{1}{4}$ inch in diameter and not greater than $\frac{1}{2}$ inch in diameter, measured over the greatest diameter.

Should any of the above mixture not conform to the specifications it may be all rejected.

Markings.—All pipes shall have marked on it the date of molding and the maker's name. When so requested the contractor shall deliver to the City Hall such samples of his pipe as the City Engineer may call for.

Tests.—Pipe laid upon a compact and even bearing of sand without side displacement shall stand a weight of 1,000 pounds per linear foot up to and including 10-inch pipe; 1,300 pounds for 12-inch and 15-inch pipe; 1,600 pounds for 18-inch and 20-inch; 1,800 pounds for 21-inch, and 2,000 pounds for 24-inch, applied the whole length of pipe, exclusive of the bell.

Untreated pipe shall show no percolation up to 15 pounds per square inch, and shall resist fracture at 50 pounds per square inch.

Pipe supported on a dry sand bed two inches deep shall withstand, without cracking, the impact from two blows from a cast-iron ball or similar object weighing 6 pounds, falling 18 inches. This test may be applied on the line of work.

Any pipe at any time that it is deemed unsatisfactory to the City Engineer shall not be used upon the work, and the same shall at once be removed and satisfactory pipe furnished in its place.

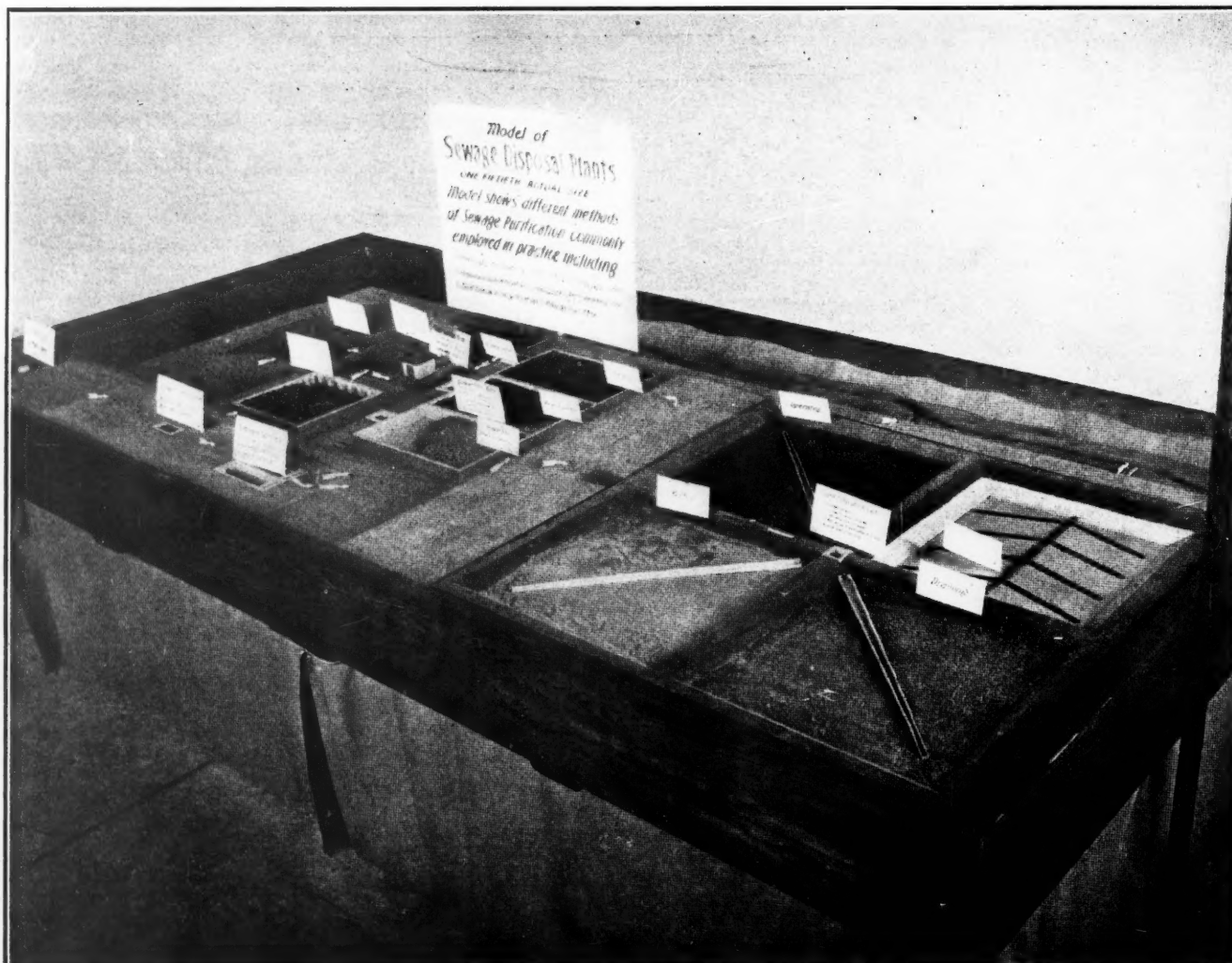
No pipe shall be delivered onto the work within thirty (30) days after being moulded.

MODEL OF SEWAGE DISPOSAL PLANT

A MODEL of a sewage disposal plant was exhibited at the recent State Fair at Syracuse, N. Y., September 12-17, in connection with the exhibit of the Engineering Division of the State Department of Health. The purpose of the models was to show the methods and processes usually employed in practice for the treatment and purification of sewage. The model was constructed on a scale of one-quarter of an inch to the foot, approximating one-fiftieth actual size, and represents a plant to treat the sewage of about 1,500 people.

Each structure was made of wood, and carefully painted to represent the various materials actually used in practice. As the models were made to operate, a complete system of miniature piping was installed which connected the various appurtenances with a water supply. By this means the course of the sewage in the process of purification could be illustrated by passing water through the several structures. Each structure was mounted in its proper position and elevation upon a pair of large tables, and the area between them was covered with a light wooden falsework to represent the excavation, slopes and embankments which are usually seen in an actual plant. The total space occupied by the table was 12 feet by 6 feet.

The various structures and appurtenances represented were



MODEL SEWAGE DISPOSAL PLANT SHOWN BY NEW YORK STATE BOARD OF HEALTH

labeled with cards in large letters and the courses of the sewage and purified effluents were indicated with lettered arrows showing sequence of each step in the process of purification.

The principal features or structures shown in this model were a manhole, a combined grit and screen chamber, a septic tank, sand filtration beds, contact beds, a sprinkling filter, a final settling tank, disinfecting tanks, a sludge disposal area and a stream into which purified effluents are discharged.

The intermittent sand filter was divided into four units. Three of these units were filled with sand, one of which was operated. The sand was shown removed from the fourth, giving a view of the underdrainage construction.

The contact filter consisted of three units each containing broken stone. Each unit was equipped with an automatic discharge siphon set in a siphon chamber. One of these units was arranged to operate showing the cycle of a contact bed.

The sprinkling filter was equipped with 36 small sprinkling nozzles. This filter was partially filled with crushed stone so arranged as to show the underdrainage system.

This operating model attracted considerable attention at the fair and much interest was evidenced by the visitors to the exhibit in the various methods of sewage purification shown by the model. At frequent intervals informal talks or demonstrations were given by members of the Engineering Division describing the model and the methods and operations of sewage purification shown by it.

RAPID SAND FILTRATION

Evolution of the Mechanical Filter—Details of Settling Basins—Automatic Operation Desirable—Coagulants—Architectural Appearance

Abstract from a paper before the Central States Water Works Association by F. B. Leopold.

AMERICAN or rapid sand filtration is the result of an evolution from what was originally known as the mechanical filter, a closed steel tank, in which was installed a system of gathering pipes and strainers covered with $2\frac{1}{2}$ feet or 3 feet of sand; the water was applied directly to this tank after the injection of a coagulant solution and passed through the sand and gathering pipes on to the distributing system. These mechanical filters used on a turbid water soon clogged with the contained silt, and required frequent washings with the consequent waste of large quantities of water. The gradual filling of the entire sand bed with deposit necessitated repeated renewals of it at considerable cost; the results were generally indifferent and often unsatisfactory.

The next step in this evolution was the wood gravity filter, with a mechanical rake operated by power to assist in the cleansing of the sand. Following this the addition of tanks for sedimentation, and treatment before application to filters, and gradually to the fully developed plant of to-day as exemplified at Harrisburg, Wilkesburg and McKeesport, Pa.; Lorain, Toledo, Cincinnati and Columbus, Ohio; New Orleans, La., and many other cities. There are to-day upward of 325 plants of this type in operation representing practically every stage of development up to the present state of perfection.

The size, shape and arrangement of settling basins at the present time are probably subject to more divergence of opinion than any other feature of the plant. Advocates of different arrangements advance arguments and results of experience to back their views.

The object to be attained is, of course, such shape or arrangement as will insure as nearly as possible a movement of each particle or drop of water from the inlet to the outlet at the same velocity, and this is much more difficult to accomplish than it seems to the ordinary observer.

In the writer's experience he has reached the conclusion that the shape of the basin may be varied to best suit the location, but the travel from inlet to outlet should be as long as possible without increasing the velocity flow sufficiently to overcome the gravitation of the suspended matter beyond the point of a nearly uniform settlement over the surface of the floor of the basin. The flow should in all cases be horizontally, and the depth of the basin should be as little as economical construction will permit.

A deep basin of any shape is to be avoided, and a round basin of any depth equally so; the size or flow capacity will depend upon the character of the water to be filtered.

The inlet distribution and the outlet gathering from the basins are important considerations and will materially affect the uniformity of displacement as well as the application of coagulants. The next part to consider is the filter beds themselves. The general design of these is now practically established, and except in details, some of which may be advantageous over others, do not materially vary in principle. These consist of rectangular reinforced-concrete boxes in the bottom of which are built an underdrain system, above which is placed a layer of gravel, on top of this the sand bed, and above the sand bed distributing troughs.

The method of conveying the water from the sedimentation basins to the filter beds will vary with conditions, but the general principle should apply to keeping the velocity in the conduit as low as possible and avoiding whirls and eddies due to numerous sharp bends.

The essential feature in design is to render the plant as nearly automatic as possible in the performance of its functions, thereby avoiding the element of error or neglect on the part of attendants. To this end all possible mechanical appliances for the proper control of operation should be taken advantage of, such as the installation of level controllers in basins, rate of flow controllers on effluent of filters, for maintaining uniform flow, loss of head gauges for recording the friction head lost in operation and indicating the proper time for washing beds, the continuous flow of visible samples from each individual bed, devices for electrically or hydraulically operating valves, the regulation and recording of coagulant, methods of application of wash water and compressed air where used.

These devices are manufactured in a wide range or variety and limitations corresponding to cost by the standard filter builders and it only requires proper knowledge to select such as the size, type of plant and water to be treated may render most suitable or desirable.

In the matter of coagulant, the character of the water will, in a large measure, determine the substance to be used, but plants generally should be equipped for the use of either sulphate of iron and lime or sulphate of aluminum in connection with hypochloride of lime.

Passing the filter, we now come to the clear water storage; the only thing to be considered here is the capacity of storage required, and this must vary with individual conditions. In any case it should be in concrete-covered basins, whether at the location of the plant or as a distributing reservoir located at a distance.

Every water supply, whether purified or not, should have in connection with its supply plant a properly equipped laboratory, and, of course, a purification plant could not be considered complete without one. Here careful daily tests and examinations should be made and complete records of all operations kept.

There is one point where improvement can and should be made, and it is up to the municipalities to do it. That is in the architectural appearance of construction. Probably no public improvement attracts more visitors, both local and transient, than a purification plant, as it is permanent construction. More attention and money should be devoted to appearances. It would be repaid many times over in advertising effect alone.

MUNICIPAL CONTROL OF ANIMALS

Power to Prohibit Running at Large, to Impound and to Kill—Authority May Be Delegated—Municipalities' Liability for Damages by Animals

IN many cases ordinances restraining and prohibiting animals from running at large in the streets of cities have been held constitutional as a valid exercise of the police power, although they have not been declared by the ordinances to be nuisances and although the decisions have not specifically declared them to be such.

In other cases the ordinances declare the running at large of cattle, horses, mules, goats, sheep, hogs, etc., to be a nuisance, and where the city has power under statute or charter to abate nuisances ordinances imposing penalties therefor have been upheld. *Quincy vs. O'Brien*, 24 Ill. App., 591; *Gosselink vs. Campbell*, 4 Iowa, 296. Such penalties may be imposed under a general power to abate nuisances or to provide for the general welfare of the municipality. Or the Legislature may expressly confer the power to enact ordinances for the proper restraint of animals. But a power given a city by charter or statute to restrain the running at large of cattle, swine, sheep, etc., and to abate nuisances does not impose it upon the city as an absolute duty to pass such a restraining ordinance, so as to make it liable for damages done by a domestic animal running at large in the streets. *Kelly vs. Milwaukee*, 18 Wis., 83. And even where the city, under its powers, does enact an ordinance prohibiting such animals from running at large in the streets it is not liable to persons injured by such animals straying in the streets. *Levy vs. New York*, 1 Sandf., 465. The adoption of such an ordinance is a legislative function and, therefore, discretionary. *Kevirs vs. Augusta*, 65 Ga., 376. But it has been held that a city may be liable for injuries to a person inflicted by a cow running at large in a street, which it could have prevented by the exercise of ordinary care and diligence, where the running at large of such animals had become a common nuisance and source of danger which it had made no attempt to stop. But if there is no fault on the part of the owner of the cow the city would not be liable for injuries committed by it. *Cochrane vs. Frostburg*, 81 Ind., 54. The Legislature may make municipalities liable for damage done by dogs within their limits, giving the municipality a right of recovery of the damage done from the owners of the dogs. *East Kingston vs. Towle*, 48 N. H., 57. Where this is done the person injured may either call upon the municipality for the amount of the damage or enforce his claim directly against the owner or keeper of the dog. *Prue vs. Roberts*, 54 N. H., 110. If the damage is paid by the municipality it can recover from the owner only the actual damage, not exceeding the amount it has paid, and it can recover no more than actual damage even although it has paid more. *Fairchild vs. Rich*, 68 Vt., 202; *Wilton vs. Weston*, 48 Conn., 325. The validity of statutes permitting the summary killing of domestic animals other than dogs running at large does not seem to have been passed upon by the courts. In Pennsylvania it was held that swine escaping without fault on the part of their owner did not come under the statute (*Com. vs. Fourteen Hogs*, 10 S. & R., 393), and that swine turned into plaintiff's lot with the consent of the defendant were not running at large within the meaning of the statute. *Martin vs. Reed*, 10 Pa. Co. Ct., 614.

A Missouri statute allowed a person to justify the killing of another's animals trespassing upon his land on showing that the land was inclosed within a lawful fence. The defense of a defendant who failed to show this was held insufficient, leaving the validity of the statute undecided.

Unless the power is conferred by Legislature upon local authorities they cannot make ordinances or by-laws for the restraint or impounding of domestic animals. *Miles vs. Chamberlain*, 17 Wis., 446. And ordinances providing for the impounding of animals must secure to the owner all his rights

therein and give him adequate means of relief on payment of the proper charges. *Dillard vs. Webb*, 55 Ala., 468. Ordinances granted under proper authority for impounding animals running at large and for their sale to cover expenses are within the police power and are not unconstitutional as authorizing a taking of property without due process of law. Ordinances authorizing the imposition of fines and penalties and the seizure, impounding and sale of animals allowed to run at large, without notice to the owners and a judicial inquiry, have in some cases been upheld as valid and constitutional. In others such ordinances have been held to be unconstitutional. It would appear that in any case the owner of the animal should receive reasonable notice, either personal or by such public notice, if he is unknown, as will give him a reasonable opportunity to be heard and safeguard his property. *Gilchrist vs. Schmidling*, 12 Kan., 263; *Varden vs. Mount*, 78 Ky., 86.

Only those upon whom the right to impound is conferred may exercise it, and any action on the part of others is illegal. The authority thus conferred cannot be delegated. It may be given to particular officers or to householders or residents as a class. *McManneny vs. Crispen*, 22 Ind. App., 368; *Jackson vs. Morris*, 1 Den. (N. Y.), 199; *Holcomb vs. Davis*, 56 Ill., 413. The power to impound is confined to the species of animals specified in the statute, and the time and place of running at large prohibited by the statute must be observed. Thus a statute prohibiting stallions to run at large will not include young colts, and one against bulls will not include cows, heifers or steers. *Aylesworth vs. Chicago*, etc., R. Co., 30 Iowa, 459; *Oil vs. Rowley*, 69 Ill., 469. And an ordinance providing for the restraint of animals "on and after" a certain day and requiring them to be impounded if found running at large "after the above date" will not authorize their being impounded on that date. *Frazier vs. Draper*, 51 Mo. App., 163; *Clark vs. Lewis*, 35 Ill., 417. Such ordinances have in a number of cases been held to be applicable to animals belonging to non-residents of the district where the animal is running at large as well as to those of residents. *Hawthorn vs. State*, 116 Ala., 487; *Horney vs. Sloan*, 1 Ind., 266; *State vs. Tweedy*, 115 N. C., 704. The operation of town ordinances regarding animals may, however, be limited by statute to those of its citizens. *Dodge vs. Gridley*, 10 Ohio, 173.

The requirements of the statute must be strictly observed in the proceedings in connection with the sale of the impounded animal, otherwise the sale will be illegal. *Strauser vs. Kosier*, 158 Pa. St., 496; *Bullock vs. Geomble*, 45 Ill., 218. And, of course, the impounder must take proper care of the animal while it is in his charge. For an illegal impounding an action of replevin or trespass is the remedy.

AN ELECTRIC PLANT BY-PRODUCT

AN electric lighting plant operated by a suburb of London, has been manufacturing hypochlorite for use by the municipality as a disinfectant for watering streets, treating the water in public baths, etc., using for this purpose its surplus power. Salt water is circulated through 40 cells run in series on a 220-volt circuit, and taking 16 to 25 amperes. The total plant has a capacity of 50 gallons per hour of solution having a strength of 4.5 to 6.1 grams of chlorine per liter.

This offers a suggestion not only for electric plants proper, but as a method of utilizing the somewhat irregular power developed by refuse destructors.

WATER-TIGHT SEWER JOINTS

OWING to a misunderstanding of the figures furnished to us we find that a mistake was made in the article published by us last week under the above title, in giving the quantity of the jointing material used by Mr. Vars at Westfield. The amount used by him was one pound per linear foot of sewer, or just one-half the amount stated, making the cost $2\frac{1}{2}$ to $5\frac{1}{2}$ cts. per foot more than cement joints. Sewer was laid in 400 feet of wet trench in two days by two laborers, one on the bank and one in the trench.

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OCTOBER 26, 1910.

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Creosoting Wood Blocks

DURING the past year much has been made public in the form of circulars and letters in the technical press concerning the matter of creosoting wood blocks, the chief matter of dispute being the nature of the creosote which is specified or recommended by the several parties and the possibility of purchasing the same at reasonable prices in the open market. The report of the Committee on Specifications for Wood Block Pavements of the American Society of Municipal Improvements, which we print elsewhere in this issue, presents the conclusions of three committeemen who have had long experience in wood block paving, one as a chemist who has specialized on the subject of asphalt and other paving materials, and the others who have for many years had charge of pavement construction work and maintenance, one in New York City and the other in Pittsburg. The conclusions of this committee are at variance with those of the authors of many of the articles, letters and circulars which have recently appeared upon the subject, and the specifications presented are based upon these conclusions. These specifications, which differ but slightly from those recommended by the Chicago convention on Standard

Specifications, are committee recommendations and not yet finally adopted by the society. It is hoped, however, that by the time of the convention of the society next fall, sufficient discussion of these specifications will have been had to make it possible to secure a practical agreement upon these, or some modified form of them, which will be adopted by the society and used by all the members thereof and by cities in general.

As in the past, our columns are open to a discussion of this subject, and we hope that full advantage will be taken of this by the presentation of arguments based upon both scientific reasoning and experience with the use of the various substances and methods advocated.

Dilution at Toronto

A BRIEF description of the sewage disposal system now under construction for the City of Toronto, which is given on another page of this issue, contains two features of special interest. One of these is the use of deep sedimentation tanks somewhat after the plan of the old Dortmund tanks, of which very few have been constructed on this side of the Atlantic. Another is the report of the consulting engineers, one English and the other American, and both of the highest standing in their respective countries, recommending for this city much the same method of disposal which has been recommended for Rochester, N. Y., and approved by the State Board of Health upon the advice of a number of prominent engineers, as described by us two or three weeks ago. It must not be lost sight of that in both of these instances the discharge is into a very large body of water and at a great distance from the shore, and that the sewage is clarified of practically all the suspended matter before being so discharged.

An interesting feature of the Toronto treatment is the disposal of the sludge, it being proposed to discharge it upon waste land which is now used for receiving city refuse and to mix it with said refuse, the dust of the latter and the water of the sludge combining to destroy these objectionable features in each.

The working out of such a system on such a large scale as is contemplated in Toronto and Rochester will be watched with interest by sanitary engineers. The greatest danger in our mind is that the mixture of sludge and refuse will be carelessly performed, and that for this reason or through the use of improper methods a nuisance be created at the point where the sludge is to be disposed of. The area to be used is undoubtedly considerable, but it has its limits and the time must probably come when either some other point must be found where this method of disposal may be continued, or else some other method must be adopted.

A South American Metropolis

THE fact that centralization of population in large cities is not confined to the United States is strikingly illustrated by Argentina, South America. While about five per cent of the population of the United States lives within twenty miles of New York City, twenty per cent of the population of Argentina lives within that distance of Buenos Aires, and nearly thirty per cent of that country's population lives in cities of more than 50,000 inhabitants. This city is said to be surpassed in population by only three cities of our own country and to be growing at the rate of 60,000 a year, with an annual construction of 12,000 to 14,000 buildings, many of them large, modern office buildings of a structural steel type, both type and material being taken largely from this country. Modern apartment houses and "sky-scrapers" are becoming numerous and steam heat common. Fortunately the rise of this capital has been so recent and the planning so wise that wide streets, parkways and local parks, municipal centers and other dreams of many United States' cities are realized in Buenos Aires, and an example is here furnished to our own cities more instructive in many respects than any offered by European cities, with the restrictions which century-old structures, ideas and customs impose upon them.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

ROADS AND PAVEMENTS

Concrete Foundation Condemned

Abilene, Kan.—The half block of concrete base on North Broadway, the first laid by the paving company, must come out. It is not up to requirements. The concrete mixer being used is out of date and the paving company must get another and it must not delay the work either while it is doing so. This is the decision reached by the City Council. R. E. McDonnell of the firm of Burns and McDonnell, Scarritt building, Kansas City, Mo., who drew up the specifications, reported that the concrete base was totally unsatisfactory. He notified the Council that every bit of the work would have to be torn up or there would be faulty paving.

Concrete Bridge Falls Near Madison, Ind.

Madison, Ind.—The 30-foot concrete bridge over Clifty Creek, between Madison and Hanover, gave way October 12 owing to the insecure foundations, greatly interrupting travel between Madison and Hanover. It was built two years ago at a cost of \$2,000.

Company Released from Guarantee

Mobile, Ala.—Receivers of the Asphalt Paving Company of Georgia at a special meeting of the Board of Public Works paid to this city \$1,000 for a release from a maintenance contract on paving done by that company in 1904. This sum is deemed sufficient to cover repairs for the next four years, the life of the contract.

Market Street, Philadelphia, Paved and Illuminated

Philadelphia, Pa.—Market street, one of the leading retail business streets, is paved with creosoted wooden blocks, illuminated with powerful lights on ornamental poles and has a subway that carries much of the passenger traffic. The poles are 22 feet high and the lamps hang at a height of 18 feet. The lighting system is not confined to this one street, but is now in operation on three other and parallel thoroughfares, as well as for a considerable distance on Broad street. The lamps are each of 2000-candlepower. The city now has in use 38,000,000 candlepower in electric lighting, supplemented by 23,000 gas lamps and 16,000 gas-line lamps in the suburban districts.

A Problem in City Planning

Columbus, Ind.—Seventeen trees, seven beech, six oak, three walnut and one thorn, form the basis of an argument that has stirred nearly every man and woman in Columbus and has brought the City Council face to face with a problem of establishing a city park or opening a street that would split the park in two and destroy the seventeen trees. The fight began several years ago and has run through three city administrations in one form or another. The park proposition is a new element, but it has caused every one to become interested. An effort to bring about a compromise is being made and if one is effected Columbus will have a 20-acre park within walking distance of every part of the city and the citizens of Orinoco, a suburb, will have Nineteenth street opened in such a manner that they will have an outlet on the west.

Indianapolis Parkways to Be Extended

Indianapolis, Ind.—An improvement which will add 43 acres to the Indianapolis park system and will result in the extension of the Fall Creek parkways from Thirtieth street to Thirty-eighth street over a stretch of Fall Creek which probably possesses more natural beauty than any section yet improved along that attractive stream, without doubt will be made next year under the direction of the Indianapolis Board of Park Commissioners. In all probability the Park Commissioners will contract for the purchase of the necessary land this year, and the cost, it is expected, will not exceed \$1,000 an acre, despite the fact that the tract is in a section of the city where land is valuable. The proposed improvement is of more importance than attaches to it by virtue of the mere beautifying of the district through which it passes, for it will mean the protection from overflow of many acres of what will be one of the finest residence sections of Indianapolis.

Automobiles Pay \$283,880 for Jersey Roads

Trenton, N. J.—For the year ended September 30 the State Automobile Department took in \$323,880 in license fees, an increase of \$78,683 over the year before. Deducting \$40,000 for department expenses, the State has \$283,880 for road repairs. Licenses were issued to 13,912 cars and 34,078 drivers.



Courtesy Dallas, Tex., "News"

MARKET STREET, PHILADELPHIA, BY DAY AND BY NIGHT

Compelled to Use Better Wood Blocks

Minneapolis, Minn.—Because the Republic Creosoting Company has been unable to furnish Norway pine and tamarack creosoted paving blocks fast enough to keep city paving crews busy, property owners must pay more per yard for paving, as yellow pine blocks will be used. Yellow pine blocks cost 22 cents more per yard than Norway pine and tamarack blocks. This expense must be borne by property owners and by the city. E. R. Dutton, paving engineer, told the Council Paving Committee last week he was not receiving blocks fast enough from the Republic Creosoting Company because of the inability of the company to get sufficient supplies of timber. He suggested that the concern could buy yellow pine in the South, and by using that sort of timber might meet the demand of the city crews. The committee authorized the city engineer to buy these blocks in such quantities as seems necessary to force early completion of paving work. The yellow pine blocks are said to be the best and most durable of all paving blocks, but likewise the most expensive. Tenth street, South, paving is of yellow pine, and notwithstanding the fact that it has had severe use it is declared to be in as good condition as stretches of paving recently laid.

Cement Sidewalks

Peoria, Ill.—Before severe freezing weather comes no less than 17 miles of concrete sidewalks will have been laid in Peoria this year.

Oiling Street Saved Money

Providence, R. I.—This year but very little water has been used, but oil has been laid in most of the streets where water was before placed. This oil has laid the dust, and had the expense for this been greater than that necessitated by the use of the water in other years, it could be said that it had accomplished something at least. But as a matter of fact, the expense this year has been materially less than in other years. In fact, by keeping watch of the cost of horses, labor, repairs, oil and water it has been found that it is cheaper to lay the oil. A comparison of the figures giving the expense of this year and that of 1909, follows: 1910—Cost of water used, \$478.30; cost of oil used, \$9,711.63; cost of repairs, \$368.24; total cost, \$10,558.17. 1909—Cost of water, \$10,354.16; cost of oil, \$992.75; cost of repairs, \$1,375.60; total cost, \$12,722.51. These figures show that the cost of laying the dust in this city this year by the use of oil has been more than \$2,000 less than that of a year ago, when water was chiefly used. It may be of interest to know that the cost of the oil that has been used this year is \$7,943.81 and the cost of water used last year was \$2,536.16. The fact that it is cheaper to use oil, therefore, is because of the item of labor. This year it cost the city \$1,767.82 for labor to lay the oil and last year it cost the city \$7,818 in labor to lay the water.

Paving Will Proceed in Shreveport

Shreveport, La.—District Judge T. F. Bell rendered a decision in favor of the defendants in the suit filed by C. F. Browne and John Bell, of Shreveport, against the three paving companies to whom they awarded contracts for paving amounting to about \$600,000, with a view of having the contract cancelled because of alleged irregularities, including a disposition for less than par. The defendants are: Southern Bitulithic Company, Hilbert Paving & Construction Company and Hot Springs Concrete & Construction Company. This suit has delayed the paving all summer.

City Prisoners Leased to Road Contractors

Taylor, Tex.—On account of a scarcity of labor with which to prosecute the work of road-building in the Taylor precinct, for which \$200,000 in bonds have been issued and the contract let to the Texas Building Company, of Fort Worth, the city authorities of Taylor have contracted with the Texas Building Company to work all city convicts on these roads, the company paying \$1 a day for such labor and being responsible to the city for the full amounts of fines and costs of such convicts until the full amount of such fines and costs shall have been paid. Usually the convicts are glad to accept this agreement to work on the roads, as the city only allows 50 cents a day for street work where convicts work out their fines and costs on the streets. The convicts are made the beneficiaries of the increased pay.

SEWERAGE AND SANITATION

To Investigate Typhoid Throughout Empire State

Albany, N. Y.—Owing to the reported greater prevalence recently of typhoid fever in this State, Governor Horace White has asked State Health Commissioner Eugene H. Porter to report to him upon the actual facts. Many of the victims of the disease, as usual, it is reported, are returned summer vacationists, and it is the supposition that they contracted the fever at summer resorts where the sanitary arrangements and water supply were not all that they should be. It is intended to follow up Dr. Porter's investigation with steps to prevent the further spread of the disease at threatened points.

Thirty Miles of Septic Tank

Indianapolis, Ind.—Thirty miles of septic tank is the term applied by J. H. Brewster, water chemist for the State Board of Health, to the Calumet River after three months spent in a survey of the stream and the territory emptying sewage into it. Mr. Brewster has begun work on his report to the State Board, which will have to do with the chemical composition of the water of the river at various points, the analyses of the compounds found in it, the nature of sludge deposited in the stream bed as a result of chemical action of sewage, the surface drained by the stream, the population of the territory for which it serves as a sewage drain and the estimated growth of the population. The computations made by Mr. Brewster will be the basis of a finding of the State Board as to whether the cities and towns in this State which are now drained into the stream should be compelled to construct artificial septic tanks for the disposal of sewage. The survey by the chemist extended from a point near the entrance of the stream into the Illinois River, to a point 30 miles eastward. Samples of water were collected at various places and at various depths in the same place and were analyzed in a temporary laboratory which Mr. Brewster established in his camp. From his figures the State Board will determine the ability of the stream to care for the sewage now dumped into it, as well as for the increased sewage resulting from the increase of population of Lake County cities and towns.

Oiling Catch Basins.

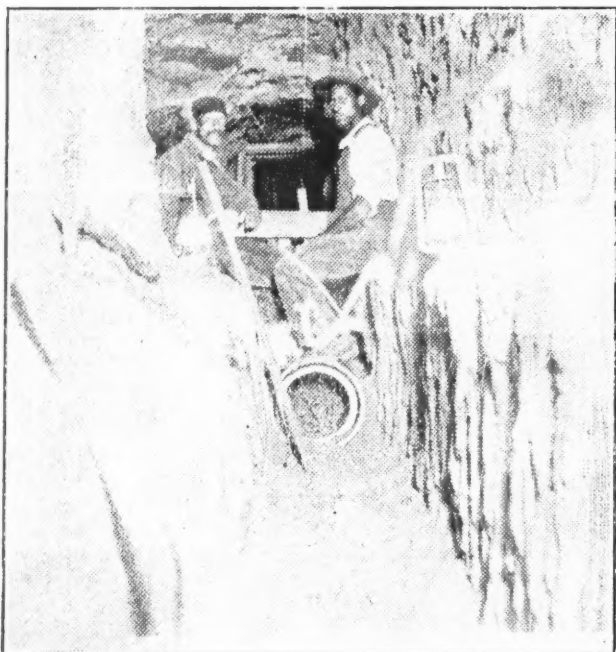
Kearny, N. J.—The first report pertaining to the efforts of the Kearny Board of Health to rid the community of mosquitoes was presented by Health Inspector Albert E. Geissler last week. He said he had oiled all the sewer basins in the town except those in Kearny avenue, which had already been treated on account of the oiling of that thoroughfare to lay the dust. The number of sewer basins and cesspools oiled was 448, besides the sewer outlets in the meadows. More than 100 gallons of oil was used. The inspector said he made an inspection of the Dukes street sewer outlet and found the oil had disappeared and that the place was full of "wrigglers," which, if allowed to develop, would become full-fledged culex pipiens. He added that arrangements had been made with Street Commissioner John Durkin to have the latter's employes oil the basins as fast as they were cleaned out. The outlets will also be oiled after each cleaning.

Providence Contracts to Treat Pawtucket Sewage

Pawtucket, R. I.—According to the contract which has been agreed upon by the officials of Pawtucket and Providence by which Providence will care for the sewage in the Moshassuck Valley section of Pawtucket, the city will pay to Providence \$8,445 per annum. Of this amount \$5,525 will be for the use of the sewerage system and \$2,920 for the handling of the sewage. The rental was based on a 4½ per cent basis on an investment of \$130,000, the proportionate cost of the Providence system from the Pawtucket line to Field's Point. Providence city will charge \$16 per million gallons for the treatment and disposal of the sewage. At present Providence will care for 500,000 gallons a day from Pawtucket, but sewer extensions will soon bring the amount up to 1,000,000 gallons daily. The sewage will be measured by meters at the point of entering Providence. The proposed method will result in a stop to the pollution of the Moshassuck River and will aid greatly in the river improvement scheme now being worked out.

Sewer in Tunnel 2,000 Feet Long Completed

Montgomery, Ala.—During the past year under the administration of Mayor Gaston Gunter many improvements were carried out, including the paving of the city streets, improvement of the sewers and drainage system, betterment of public buildings, reconstructing the water works,



Courtesy Montgomery Journal.

SEWER IN EARTH TUNNEL 40 FEET BELOW SURFACE

building a refuse destroying plant, completing a city wharf and carrying out ideas for beautifying the city. The illustration shows a section of a sewer in earth tunnel. This sewer is 2,000 feet long, 40 feet below the surface in its deepest portion. It connects a suburban section with the main outfall sewer, obviating the necessity for a new outlet. William A. Gunter, Jr., recently succeeded his brother as Mayor, and is keeping up the good work.

Cities Co-operate in Protecting Milk Supply

Pittsburg, Pa.—Health officers of Pittsburg, Cleveland, Akron, Columbus, Lorain, Cincinnati and Youngstown, O., after a conference formed a community of interests tending toward the protection of the milk supply of these cities. Hereafter daily inspectors' reports will be exchanged between the cities and when infection appears or uncleanness is not remedied the information will be sent to the markets of these cities to prevent milk rejected by one city being disposed of in any of the others. The proximity of these cities to the same sources of milk supply brought about the conference when a dairyman said he would sell his milk in other cities when told by one city that his supply was infected.

Unsanitary Conditions Spread Typhoid

Syracuse, N. Y.—Investigation of the cases of typhoid fever in Syracuse has convinced Health Officer David M. Totman that all unsanitary conditions in the locality of each case must be cleaned up and the most rigid safeguards applied. Dr. Totman said he believed the Bureau of Health should immediately devote its energy to this end. If the source of the disease is in these conditions, further contagion from the same cause will thus be prevented, and in any event the liability of infection from an ill patient will be minimized. Revolting conditions have been disclosed in the investigations to learn the origin of the disease. "In every case that I have personally investigated of persons living in the city," said Dr. Totman, "the surroundings were unsanitary. Some of the conditions were very bad, not only on the outside of the houses, but inside. If there is such a thing as flies carrying typhoid, and there seems to be, it could be easily done in many of these cases. Back yards, rooms, hallways and clothing, in many cases, were positively revolting. I believe that these conditions should be corrected and the neighborhood of every case of typhoid made sanitary."

Five Towns May Build Joint Sewer

East Orange, N. J.—In conference in the City Council Chamber last week representatives of this city, Orange, Montclair, Glen Ridge and Bloomfield weighed the prospect of spending among them as their estimated share of the Passaic Valley Sewerage Commission's project to purify the Passaic River, \$2,136,000, against an expenditure for the same purpose on their own account of \$1,540,000, and found the Commission's plan wanting. They concluded to work together, perhaps employ legal and engineering talent, and ultimately construct their own sewage disposal system. The conferees will come back to another meeting with more authority from their respective Councils and at that time take definite action. The plan is to build a trunk sewer to a point on the Hackensack meadows, where a filtration plant would be located. The estimate of \$1,540,000 does not include rights of way and 100 acres for the plant.

Health Authorities Stop Rummage Sales

Logansport, Ind.—The prevalence of contagious diseases among children in this city has moved the health authorities to adopt strict preventive measures and this has brought the health authorities and women's societies into sharp conflict. The Health Board stopped two rummage sales being conducted in vacant storerooms by church organizations. Later the office of Dr. John Bradfield, Secretary of the Health Board, was besieged by the indignant to protest against the so-called "outrage." In reply Dr. Bradfield served notice to them that henceforth no church dinners nor suppers will be allowed to be held in vacant store rooms that are not well cleaned. Matron Mariette Poole, of the Orphan's Home, after consulting with Dr. Hurty, of the State Health Board, decided to burn a roomful of second-hand clothing which had been donated to the Home.

Board Favors Milk Cartons

Sacramento, Cal.—According to Secretary Snow, members of the State Board of Health are greatly in favor of the plan of using a single-service package for the handling of milk, as suggested by the ordinance recently drafted in Alameda. In brief, the Alameda ordinance, drafted to revolutionize the selling and handling of milk, aims to do away with big cans from which milk is now measured in the dairy depots and from the milk wagons. Instead, there will be single packages. Each package will be filled either at the dairy or dairy depot and there sealed. Grocers selling the milk will handle only the sealed packages. It is suggested that paper cartons will probably be principally used owing to their low cost and the fact that they cannot be refilled. This, it is believed, will insure clean and pure milk.

"Health Week" at Warsaw

Warsaw, Ind.—"Health week," which was conducted in Warsaw last week by the State Board of Health, is arousing the people of the county to action along lines of pure air and pure food. An exhibit, a notable feature of the week, was in the charge of Dr. King, assistant to Dr. J. N. Hurty, and John Owens and Frank Tucker, pure food inspectors. These men were busy preaching the doctrine of fresh air and pure foods. Lectures were given to the business men, farmers, school teachers and school authorities, children, club women and others. Dr. King visited the school buildings of the county and conducted medical examinations to illustrate the measure that is being advocated by him in his lectures. Many of the buildings have been found to be poorly ventilated and threats of condemnation have been made in case the conditions are not remedied. In the meantime Inspector Tucker has been busy visiting dairies and inspecting stores, with the result that already one affidavit has been filed against a Warsaw dairyman on account of its condition.

Board of Health Work to Be Liens on Property

Woodbury, N. J.—Because several property owners in this city have refused to abate nuisances, the Board of Health has instructed its inspector to proceed with the work, the cost to be made liens against the properties. The Board also passed a resolution requesting Council to enforce several ordinances that directly would be a benefit to the public health of the city. One of these is the speed law of automobilists, who have been making a good thing of the fine streets of the city, scattering dust galore into the houses along the line.

WATER SUPPLY

Brainerd Adopts Hypochlorite Treatment

Brainerd, Minn.—The city will install a hypochlorite plant for the treatment of river water used for drinking purposes. Two chemists will be employed. Prof. F. H. Bass, engineer in charge of the State Board of Health, was in the city last week in consultation with the Water and Light Board. All water mains will be thoroughly washed.

Shipping Water in Tank Cars

Haskell, Tex.—The Haskell water works is now supplying Aspermont, the county seat of Stonewall County, with water, shipping two tank cars per day. Anticipating other calls for water and to make sure of an ample supply, the city is having another well sunk, which will be connected by underground pipe to the present wells, making a gang of three wells. Mayor H. S. Wilson states that this addition will cinch the water question so that they can meet all calls.

Dispute Over Extra Work

Haddonfield, N. J.—Wilbur Beaumont, the Atlantic City contractor, to whom the contract for the erection of the power house of the new municipal water plant was given, has instituted suit against the borough to recover an amount of money which he asserts rightfully belongs to him. After the building was partly constructed a spring broke out under the foundation and filled the cellar with water. Mr. Beaumont stopped work and when notified by Council that the defect must be remedied after a certain way it is claimed he did not conform to the dictates of Council and consequently another man was put in his place to finish up the work. Mr. Beaumont has received \$3,129 of the contract, which calls for \$6,250. Council has offered to settle for \$1,425, but he refuses to take less than \$2,900.

More Water This Year Than Last for Newark

Newark, N. J.—Rumors have been circulated recently that Newark's supply of water was growing dangerously small, the reports evidently coming from those who have noticed that Oak Ridge and Clinton reservoirs were below their usual water line. As a matter of fact, the city has somewhere near four months' supply on hand. Chief Engineer M. R. Sherrerd, of the Street and Water Board, says: "We have more water available now than we had at this time last year. Somewhat more than 115 days' supply if there were no rains. I have not investigated closely, but I imagine there was more waste last year, and that the drought this year is really not as severe as it was last year. Boonton reservoir, Jersey City's source of supply, is lower than last year. I understand. We have, of course, a great margin of safety. The lowest point ever touched was in 1901, but there was sufficient then. It is, of course, necessary to have this liberal margin, and it is desirable for the public health that there should always be plenty of water in the reservoirs.

Reservoirs Favored for London

London, England.—Water works costing £6,273,710 for five reservoirs in the Thames Valley to hold 20,000,000,000 gallons and supply London until 1941 were objected to at the Metropolitan Water Board on aesthetic grounds and on the ground of the danger of earthquake and invasion, which would mean a London bereft of water. It was, however, decided to ask parliamentary approval of the scheme, which involves a capital outlay before 1941 of £10,000,000.

Malden Still Most Economical in Water Consumption

Malden, Mass.—The monthly report of the Metropolitan Water Board still shows Malden at the head of the cities in the entire district. The following figures show the per capita consumption in September, 1909 and 1910:

	1909	1910		1909	1910
Boston	140	129	Arlington	83	88
Somerville	79	79	Milton	43	34
Malden	46	45	Winthrop	90	69
Chelsea	79	77	Stoneham	91	85
Everett	75	72	Belmont	58	64
Quincy	100	96	Lexington	75	74
Medford	77	56	Nahant	66	65
Melrose	63	65	Swampscott	57	57
Revere	89	89	Entire district	117	109
Watertown	54	70			

Trials Due to Water Shortage

Palmer, Mass.—Tub baths, unless one cares to use the Quaboag River for a bath tub, is prohibited in an order issued last week by the Palmer Water Company in an effort to conserve the rapidly diminishing supply which the town's reservoirs hold until artesian wells can be sunk and other steps taken. The water has reached a point where it is but a few inches above the pipes through which it is pumped to the houses and stores, and Chief Summers, of the Fire Department, declares that with two fire streams he could completely empty the pipes in 10 minutes. It was this condition that caused the water company to issue the notice to householders forbidding the withdrawing of water for bath tubs until further notice. The water company has already made arrangements for the sinking of artesian wells to tide the town over until the reservoirs fill up again, and actual work will probably be started early next week. It will be some time, however, before the town will be able to draw upon this new supply to any extent. Meanwhile Fire Chief Summers has made arrangements for the protecting of property to the best of his ability in case of fire. The town's fire engine has been placed under a temporary shelter at the bank of the Quaboag River, with lines running into the water and steam constantly up. From the engine a line of hose 900 feet long extends to Main street in the heart of the business district, ready for instant use, and another to a hydrant on Water street, from which the back streets of the town could be supplied if the necessity arises. In addition scores of chemical fire extinguishers are being distributed throughout the town.

Bad Break in Twenty-four-Inch Main

Schenectady, N. Y.—A break in a 24-inch water main in Dock street about 4 a. m., October 15, did over \$30,000 damage. The main is normally under a pressure of 90 pounds per square inch. A section of pipe 16 to 18 inches in diameter was blown out. The escaping water was doing so much damage to an adjoining building, threatening to undermine it and cause it to fall, that Superintendent Holtzman, of the water works, ordered the pumps to shut down. The city was entirely without water for two hours and normal pressure was not restored throughout all of the city for several hours afterward until the stand pipes were filled. To shut water off from the broken pipe three gate valves had to be closed, one of them requiring 144 revolutions, the other two 92 each. After they were closed the water was again sent into the mains through the 36-inch main running through Mount Pleasant. Superintendent Holtzman says the broken main was 14 years old. He is unable to assign a definite cause for the break, but suggests air in the mains with the resultant hammering of the pipes. During the time water was shut off Chief Yates, of the Fire Department, took extraordinary precautions against fire. Connections were made to pump water from the canal in case an alarm should sound and steam was kept in the boilers.

Delaware River at Trenton Lowest in Years

Trenton, N. J.—The Delaware River at Trenton is lower than it has been in years, and the Board of Water Commissioners are fearful lest it may fall below the line of the intake pipes of the city's pumping station at the foot of Calhoun street. It is said that the trouble is due as much to the raising of the dam at Scudder's Falls as to the drought. The dam throws water from the river into the canal of the Trenton Water Power Company. This company's plant was recently purchased by David Pepper and other Philadelphia capitalists, and the work of increasing the height of the dam was commenced during the summer.

Both Water Works Pumps Break Down

Troy, Ala.—A water famine was experienced last week as a result of the breaking down of both pumps at the water works. The piston rod of the large pump had broken about 10 days before and a new rod had been ordered from New York. Doing double duty was too much for the small pump and that broke down, too. Ninety feet of water was held in the stand pipe for fire protection, and wells, of which there are a few in every street, supplied the drinking water.

New Jersey Suburban Towns Short of Water

New Milford, N. J.—The lack of rain is causing the Hackensack Water Company no little concern. With Woodcliff Lakes practically dry, the situation is becoming alarming. Should the drought continue very much longer, the people using the water from this company will be compelled to work on a limited supply. The mills throughout the towns bordering on the Hackensack River above New Milford are working on part time. At first very little was thought of a water famine, but if it does not rain within a short time this section of New Jersey will be facing the same situation as Westchester County, N. Y. The company is now drawing on its river supply, as the lakes at Woodcliff are dry. The little rain that fell recently did not relieve the situation at all. The Jersey City Water Department is supplying Hoboken with Boonton water, and as Hoboken is the largest consumer of the Hackensack Water Company's supply the help given by Jersey City is of much value because it enables the Hackensack Water Company to save for the Bergen County municipalities the water that would otherwise have to go to Hoboken.

Water Plant Debt Free

Kenosha, Wis.—The Kenosha Municipal Water Company has paid off its entire bonded indebtedness, amounting to \$72,000. The bonds, which were held by Eastern investors, were presented for payment, and the trust deed which has been on the plant will at once be canceled. The original bonded indebtedness of the municipal plant was \$134,000. All of this has been paid off directly from the profits of the company since 1894 and in addition more than \$200,000 has been expended in new equipment and in the extension of the mains of the company. The plant will now pass directly under the management of the City Council.

Checking Water Waste

New York, N. Y.—In an address in the auditorium of the Budget Exhibit Dr. Edward W. Bemis, Deputy Water Commissioner, said that in the nine months of this year up to October 1 only \$50,000 had been expended by the Bureau of Water Waste. The waste of 3,915,000 gallons of water a day in streets and houses had been checked. "The daily amount of water," he added, "sells for \$190,000 a year, and even at half price is worth \$85,000. Prior to this year practically nothing had been done for a long time in New York to check the waste of water."

Test Water Pressure

Virginia, Minn.—Mayor Andrew Hawkinson, members of the Police and Fire Commission and several other city officials last week witnessed a test of the pressure of the water flowing from the hydrants at the outskirts of the city which was made by Chief of the Fire Department A. F. Thayer. A Curtis fire stream gauge was used to measure the flow and City Engineer E. F. Johnson took the height of the streams with a transit. In each instance the tests were made at the extreme outside points of the city. During the test the recording gauge at the central station registered 120 pounds of pressure, and the dial registered the same at the power station. The officials all are well satisfied with the result of the tests made.

STREET LIGHTING AND POWER

Decorative Lighting in Burlington

Burlington, Ia.—An ornamental system of street lighting for the business district of Burlington has been adopted and two blocks on Main street are being equipped. The laying of cables has been finished and the Doric light standards carrying five incandescent lights will soon be in place. The cost to each merchant is \$33.33 for the installation and \$1.18 per month for front of 20 feet.

Would Limit Earnings in Franchise Contract

Cleveland, O.—Councilman Gahn declared last week that if the Cleveland Electric Illuminating Company insists on the insertion of a 25-year municipal ownership clause in its proposed general heating pipe franchise covering the entire downtown section, he would ask the Council to place a provision in the grant limiting the earnings of the company to 6 per cent on the investment.

Start Work on Atlanta's Great White Way

Atlanta, Ga.—The "Great White Way" will soon become a reality, for all of the necessary apparatus which is required to light up Peachtree street from Ellis to the viaduct and then out Whitehall to Mitchell, and out Mitchell to the Terminal station, arrived in two cars last week and was at once sent to the Davis street plant of the Georgia Railway & Electric Company.

The work of construction was begun and will be pushed forward as fast as possible. It will, however, take some time for the underground wires to be run from conduits to the sidewalk, and for the holes to be dug for the posts. These posts are to be placed 70 feet apart on both sides of the street. The lights will be kept on continually.

Advises City to Guard Supply of Natural Gas

Cleveland, O.—City Gas Expert William Marks has advised the City Council to take every precaution to tie the East Ohio Gas Company up to a provision that would insure a full supply of natural gas for Cleveland if there was any chance of the company's carrying its mains east of Baltimore. "If they get to Baltimore it is only a step to Philadelphia and then to New York," he said. "Cleveland should see that it gets all the gas it needs before it is sent on to these cities."

Conclusions Regarding Disposition of Owens River Water and Power

Los Angeles, Cal.—The following ideas sum up the public sentiment on the question of disposal of surplus Owens River water, as expressed by the great number of speakers representing all the interests of the city at the series of water conferences, which closed last week:

The distribution of surplus water from the Owens River on its arrival should be limited to territory adjacent to the city which is possible of absorption by the city.

Water applied on outside territory should be applied with the understanding that the water shall never be withdrawn, but that the territory shall be annexed before the city needs the surplus elsewhere.

The selection of such outside territory should be made by city officials at the present time, with a view to consolidation of city and county government at the earliest possible date.

No part of the Owens River water or power should ever be alienated, nor can it be without the practically impossible consent of two-thirds of all the voters.

In selling its surplus water, the city should not attempt to charge "all the traffic will bear," or to make it purely a profitable enterprise. The first thought should be to make the enterprise self-paying and self-supporting; the next, to apply the water so that it will do the greatest good toward developing the resources of the districts adjacent to Los Angeles.

The bonus plan submitted by William Mulholland, Chief Engineer of the aqueduct, suggests the most practical solution of the water disposal problem.

The discussion is now closed, so far as the public is concerned, and the city officials who have the question in charge have taken the problem under consideration and later will act in accordance with the many helpful suggestions which have been made to them by their constituents. The city officials will now take up the power features at the first power discussion. The principal speaker will be John B. Miller, president of the Edison Electric Company.

Considering Municipal Power Propositions

Spokane, Wash.—The consensus of opinion among city officials and Councilmen as indicated at a recent committee meeting is now in favor of constructing the dam to generate 6000-horsepower at first proposed at the upriver station. However, the proposition of getting more power elsewhere will be considered, and it is possible that a site will be chosen which will not only furnish power for the pumps, but for street lighting and for selling to city light consumers as well. Mayor Pratt is strongly in favor of building the plant at the upriver station. W. P. Russell has offered a power site on the Salmon River in Idaho, 140 miles from Spokane, to the committee for \$75,000. Ninety thousand horsepower can be developed there, but it would cost over \$2,000,000 to develop it and \$300,000 to construct a power line to Spokane from the site. Several other sites are under consideration by the committee on the river above and below the city.

FIRE AND POLICE

Would Improve Police

Allentown, Pa.—Major Charles D. Rhoads, Chief of Police, in his annual report makes some important recommendations. Major Rhoads thinks that Allentown, having become a city of upward of 50,000, should discard many village practices in its Police Department and become more metropolitan. He says \$60 a month, out of which they must provide their uniforms, is insufficient to get the high class of men desirable, and he recommends a salary of \$75 a month, and that the city buy the uniforms, revolvers and other equipment. He suggests 10 additional officers to the 30 now employed, and thinks there ought to be three 8-hour platoons instead of two of 12 hours, and that a street sergeant head each division. For hurry calls he recommends that a motorcycle be placed at headquarters and he also favors the establishment of the red light system of signals. Major Rhoads says Councils ought to pass an ordinance regulating street traffic, and that steps should be taken to enforce the State automobile law with a speed in the city not to exceed 12 miles an hour.

Niagara Gives Light and Power to Ontario

Buffalo, N. Y.—Niagara power is now a reality in Ontario. Premier Sir James Whitney, of Ontario, pressed the button in the auditorium at Berlin which switched on the first of the cheap power. The event marked the consummation of the project launched eight years ago by D. B. Detweiler, of the Berlin Board of Trade, which led to the creation of the hydroelectric power commission by the Ontario Government. The people of Ontario look upon the benefits of this work as inestimable. It means cheaper generative power and cheaper light for the consumer. The transmission lines carry 110,000 volts and are the highest powered in the world. They now extend over a radius of 30 miles, and eventually the territory supplied with Niagara power will be that bounded on the West by Windsor and on the East by Kingston. Work is being rushed on the construction of lines out and around Berlin, which, as a substation, will soon be in a position to supply the neighboring towns and villages. The button which made the first circuit was presented to Premier Whitney set in a velvet cushion by Miss Hilda Rumpa, who, dressed as Miss Ontario, wore a crown of electric lights. Nine thousand persons from all parts of Ontario, including representatives of all of the large power users, were present.

Private Switchboard for Erie Firemen

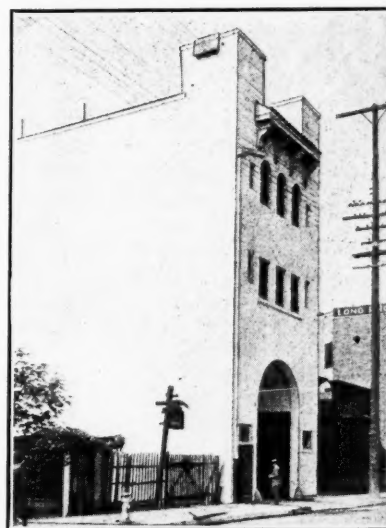
Erie, Pa.—Many complaints have been made of the delay in getting Fire Department headquarters by telephone when an alarm for fire is being telephoned in, and Chief McMahon has suggested to the Board of Fire Commissioners that the department install its own switchboard at headquarters so that whenever a fire alarm is received at the telephone central it will immediately connect up with headquarters, a special "red wire" being always ready for such calls and used for no other purpose, which will immediately give the alarm by lighting a red light at fire headquarters. Chief McMahon saw this system in operation at the convention of Fire Chief Engineers at Syracuse, and the report of the fire was communicated direct to fire headquarters instead of having to be first sent through the telephone central and then to the fire headquarters, as is the case at present in Erie. The Chief explained that the switchboard at headquarters now belongs to the Bell Telephone Company, and it would not allow the Mutual Company to attach its wires to the board, and as there are more Mutual 'phones in the city than Bells, the system is not even half good. The Fire Commissioners approved of the suggestion and instructed the Chief to make inquiries as to the cost of installing the apparatus.

Good Eight Months' Record of Motor Chemical

Houston, Tex.—During the eight months that the motor chemical has been in service it has put out more fires than any other single piece of apparatus and has been out of commission but once. The cost of maintenance has been only \$2 or \$3 a month, according to Assistant Chief Allie Anderson.

Reinforced Concrete Fire House

Los Angeles, Cal.—A three-story fire-engine house, which extends from Fifth to Winston street, a short distance east of Los Angeles street, and has entrances from each of the two streets first named, has been completed and is occupied. It houses engine No. 23 and truck No. 6 and is the home of



Courtesy Los Angeles Express.

FIRE HOUSE AND CHIEF'S RESIDENCE

and the captain of the hose wagon, locker room, a trunk storage room and bathroom. The living apartments are finished in oak and the bathroom in white enamel. On the third floor are the Chief's living apartments, including three bedrooms, office and reception room. Oak and mahogany are used in the finish of these rooms. In the basement are water heaters, one of which will provide water for the engine, coal storage and a room for electric appliances. The cost of the building is given as about \$50,000. The plans were prepared by Hudson & Munsell and the structure erected by the F. O. Engstrum company.

Will Have Auto Engine of 1,000-Gallon Capacity

Lansing, Mich.—An auto fire engine having a capacity of 1,000 gallons a minute is being constructed for the Lansing Fire Department. The chassis, built by the Olds company, of Lansing, is nearly ready for trial. If satisfactory it will be shipped to St. Louis, where the Webb company will equip it with the powerful pump. The new engine will probably be ready by the first of the year.

Improvements in Macon Fire Department

Macon, Ga.—That the Fire Department is now in its highest state of efficiency, and the officials of it and of all other departments of the municipal government are doing all in their power to facilitate and improve the service, was the text of a report made to Council last week by Chairman Ross Bowdre, of the finance committee. The essential feature of this report was that the chief will make a test of every fire plug in the city. Fuel will always be kept in the engine fire boxes. The electrician will issue new fire keys to the police force on the first of January and the chiefs and lieutenants of the police force will see that every officer, on going on duty, is provided with such a key. Instead of having an additional inspector for cellars, etc., the present inspector will have no other duties to perform and will give his whole time to inspection. As to separating the Fire Department telephone from the main system of the city, the officials thought it best not to do so, as the present arrangement in the City Hall exchange was better in every way and it was only necessary for the citizen to call for 1880 and say "Fire," when, by a peculiar arrangement, the department would be immediately notified.

Taylor Gets Fire Marshal

Taylor, Tex.—In accordance with the requirements of the State Fire Rating of Insurance Board the City Council at its last regular meeting passed an ordinance creating office of fire marshal of Taylor and defining the duties and requirements of such officer. Mayor C. M. Still appointed Peter C. Goebel, Secretary of the Taylor Fire Department, to the position.

Asks Police Chief to Quit

Cincinnati, O.—Because of conditions in the Police Department revealed by Safety Director Small's investigation of graft, Colonel Paul M. Milliken has been asked to resign from the office of Chief of Police by Mayor Schwab. Colonel Milliken refused to resign and will fight against removal. No mention of him as an alleged partaker of "graft" had been made, but the Mayor held that he should have been conversant with conditions and corrected them. Mayor Schwab acted under a recent decision of the State courts at Sandusky, O. The Chief of Police there was removed, and both the Common Pleas and Circuit courts held that inasmuch as he was under the supervision of the Mayor and Safety Director, they had a right to remove him if he failed to accomplish the good work expected in the department.

Auto Squad Wagons for Indianapolis

Indianapolis, Ind.—Although the new auto squad wagon for the Fire Department is not expected to arrive before the middle of December, Chief Coots is planning the organization. Squad A will be composed of seven of the department's best men, two of whom are now at the automobile works in Detroit learning the details of construction. Captain Herbert Fulmer will be in charge of the squad. Four men will be picked from the ranks; they must be young, active, resourceful and possessed of good judgment. The Squad A wagon will answer about two-thirds of all alarms. Chief Coots wants a second squad wagon in the near future.

Inspector and Drillmaster for Police

Norfolk, Va.—The position of Inspector of Police and Drillmaster is to be created in accordance with the ideas of Colonel Hodges, Chairman of the Police Committee of the Board of Control.

He will be on the personal staff of the Police Major, C. G. Kizer, and be subject to orders only from the head of the department. The Inspector and Drillmaster will be mounted and rank as Acting Sergeant, but will receive only the pay of a patrolman. The position will be given to Patrolman Morse. The following is a general outline of the duties of an Inspector on metropolitan police forces: Inspect members of the department as to their personal appearance, military bearing and general demeanor; report to the Chief of Police any infractions of discipline that might come under his observation; inspect police stations; inspect police equipment.

Purchases of Supplies to Be Checked

Syracuse, N. Y.—Regulations have been put in force by Commissioner of Public Safety H. E. Hessler which will require that all supplies bought by the bureaus of the department be checked up when received and a report made to the main office. This covers hay, feed, oats, straw, shavings and other articles furnished the different fire companies. Each engine house will be provided with scales for weighing supplies when delivered, so that the quantities called for in the contracts will be furnished. The rules also provide that the officer checking up the goods delivered must report whether the articles received are of the grade called for.

Washington's Annual Fire Loss

Washington, D. C.—Fire losses aggregating \$321,519 were caused in the District of Columbia by 1,062 fires during the fiscal year ended June 30, 1910, according to the annual report submitted to the Commissioners last week by F. J. Wagner, Chief of the Fire Department. The buildings and other property damaged by fire were insured for \$4,388,436, so that the actual losses represented only about 7 per cent of the total insurance. There were sixteen large fires for which extra alarms were sounded, and in these the losses totaled \$143,160. In six other fires the losses reached \$99,600, and the remaining 1,040 fires caused losses totaling only \$78,759.

Mounted Police for Night Service

Wichita, Kan.—Two mounted police for night service have just been added to the Wichita police force, the men going on duty last week for the first time. They will have a roving commission about the city, visiting the parks and outlying districts at intervals during the night.

Cheap Power for Alarm System

Westerly, R. I.—The new triple circuit Gamewell fire alarm system is now in working order with the latest improved switchboard, which is located in the engine house. The power is supplied from the plant of the Westerly Light and Power Company at the cost of only \$12 a year. A generator is located in the engine house, which may be used in case the local plant should become disabled. The generator has to be charged every other day and it takes eight hours to do it. This has to be attended to by Chief Cottrell. He starts the generator at 8 o'clock in the forenoon and shuts it off at 4 o'clock in the afternoon. There is no automatic shutoff with the dynamo.

A Gym for Policemen

Wichita, Kan.—In order that the patrolmen may have physical training, Mayor Davidson has placed a room in the basement of the city building at the disposal of the department to be fitted up as a gymnasium. The department will buy the apparatus by taking up a collection among the patrolmen and the officers will be put through training lessons. The system is adopted in connection with military discipline recently adopted by Chief McPherson.

GOVERNMENT AND FINANCE

Unit Cost System Will Save Money

Los Angeles, Cal.—The new unit cost system which has been figured out by J. B. Lippincott, Park Commissioner, and C. T. Herbert, Park Secretary, has shown the Park Commission how it can save nearly \$15,000 in the next nine months on its operating expenses. The system is similar to that which has been devised for the entire aqueduct bureau. A schedule, which was submitted and adopted, shows that the department has been carrying 149 men to do the work of 133 for the dry season and 113 for the wet season. The extra men will now be employed in making improvements and the money which the commission plans to save between now and July 1 next—\$14,747.57—will be used for betterments.

Seattle's Mayor May Be Recalled

Seattle, Wash.—Circulation of the petition for the recall of Mayor Hiram C. Gill was begun last week. The wording of the petition is similar to that employed in the recall of Mayor A. C. Harper, of Los Angeles. It declares that Mayor Gill has shown himself incompetent and unfit; that he has abused the appointive power by selecting, for personal and political reasons, men physically unfit for the offices; that he has wholly failed, refused and neglected to enforce the criminal laws; that he has permitted Seattle to become a home and refuge for the criminal classes; that his continuance in office is a menace to the business enterprises and morality of the city.

Brick Vault to Preserve Town Records

Windham, N. H.—For the safe preservation of the town records and documents the Selectmen have had built a brick fireproof vault attached to the south rear corner of the townhouse and opening out of the lower hall. The outside dimensions of the vault are 9 x 10 feet, inside 6 x 7 feet, and it is 7 feet high. The walls are double, with an air space in the middle. The floor is of cement and the ceiling of brick, supported by iron stringers, the whole being covered by a shingled pitch roof. An iron door is to close the entrance to the vault.

Charges Preferred Against Mayor

Zanesville, O.—Representatives of the Civic League and citizens of Zanesville are determined that Governor Harmon shall pass upon Mayor A. H. Gowell's fitness to occupy that office. The Mayor is accused in formal charges filed with the Governor with non-enforcement of the law and being in collusion with the lawless element of the city. Many specific charges are made of violation of the liquor law and numerous assaults upon citizens are cited as showing the state of lawlessness and danger to life and property. One hundred affidavits supporting charges were brought to the Governor's office by Rev. D. M. Ross, pastor of the Presbyterian Church of that city, and W. J. Massey, attorney for the Civic League.

Improvements in Milwaukee Financial Department

Milwaukee, Wis.—The new system governing purchases made by the City Purchasing Department, outlined by Deputy Comptroller Leslie S. Everts, went into effect last week. All purchases will be made through regular channels, placing the Superintendent of Purchases in absolute control. In order to prevent too much tape the system has been made elastic by provision for emergency requisitions, followed by confirmation. The system provides an accurate method of recording and checking prices. All irregularities affecting purchases will be brought to the surface and corrected. In addition to the plan for the purchasing department, a new system for the handling of the city budget has been perfected by Mr. Everts. It provides for a new manner of collecting details as a basis for budget-making. The expenditures of departments will be sharply defined, and blanket appropriations will be done away with. A reorganization of the general accounting methods of the water works department, insofar as they pertain to the final collection and distribution of facts affecting the income and disbursement of this department, will be attempted. A reorganization of the records in the comptroller's office in order to reduce the amount of work done, and at the same time produce more effective information, is aimed at. The system will introduce vouchers or distribution records into all the departments for the purpose of laying a proper foundation for future cost-unit work and to provide all department heads with current and accurate knowledge as to the condition of their funds. The introduction of a monthly statement plan between the department heads and the comptroller is included in the plan, in order to promote harmony and prevent the possibility of appropriations being unknowingly exceeded by department heads. The new system also includes the development of a uniform payroll to be used by all departments, and a new plan for the handling of the service transfers.

New Orleans Banks Do Not Buy Bonds

New Orleans, La.—The failure of the city to receive a bid for its \$7,000,000 sewerage and drainage bond issue has stirred up local financial quarters, and local bankers deny that they broke faith with Mayor Behrman or City Attorney Moore, as they charge. It is contended by city officials that New Orleans cannot turn back at this stage of her great municipal improvement and that the great work of sewerage and draining the city must not stop because the bond issue, with which it was intended to complete the work, has failed to sell. Short-term certificates can be issued, and a special session of the Legislature may be called to pass the necessary legislation legalizing such certificates. It is contended that \$3,500,000 would do the immediate work.

Pensacola Banks Bid High for City Funds

Pensacola, Fla.—That the city deposits are in big demand with the banks of Pensacola was shown when the Council Finance Committee received bids for handling the city money for the year commencing November 1. Four of the five banks submitted proposals, each offering to pay a percentage on the amount deposited. Some of the banks submitted bids on the various classes of funds, or balances, and none were below $4\frac{1}{8}$ per cent. From that amount they ranged up to 7 1-6 per cent., the Pensacola State Bank offering this and will be awarded the job of being the city depository. This system of handling the city's money has been in vogue for the past two years, the city treasurer no longer being able to designate the bank in which the money shall be placed, and by this means the city is gainer annually by between \$3,000 and \$5,000.

Consider Partial Payments to Contractors

Portland, Ore.—At the next meeting of the Civic League the proposition will be discussed to change the provisions of the city charter so that contractors on all public improvements may receive a portion of their pay before a contract is finished. It is contended that if contractors were paid 50 per cent. of the amount of a paving or sewer contract before the entire job was finished they could afford to submit lower bids for the work, thus making the burden of improvements less heavy upon property owners. At present the contractors receive no pay from the city until it has been accepted finally by the city and the money on the assessments paid into the city treasury.

STREET CLEANING AND REFUSE DISPOSAL

Crematory Tested and Accepted

Lynchburg, Va.—The crematory recently built in Dearington and which has been in operation for the past month was visited by committee from the City Council consisting of John P. Pettyjohn, Dr. A. L. Wilson and City Engineer Harry L. Shaner. The committee made a thorough inspection of the plant and watched the operation of it for some time, after which it was formally accepted by them on behalf of the city of Lynchburg from the DeCarie Incinerating Company, of Minneapolis, which company constructed it. The cleanliness and neatness prevalent at the crematory has proved quite a pleasant surprise to every one. Such is the care taken in the operation of the plant that no odor can be detected twenty feet from the building and very little even in the interior of the place. Between September 18 and October 12 320 tons of garbage were consumed at the crematory, Sundays not included. At times the cost of consumption has exceeded slightly the contract price of 50 cents per ton, and at times it has gone much lower than this, even dropping at times as low as 25 or 26 cents per ton. Very little coal is required by the crematory.

Montclair Needs an Incinerator

Montclair, N. J.—The State Board of Health, Bruce S. Keator, secretary, has made the following report of the results of its investigations on Montclair's method of garbage disposal:

Twelve acres of what is known as the Garretson farm, which is located in Upper Montclair, have been set aside for the disposal of garbage. The local Board of Health has nothing whatever to do with either the disposal or collection of the garbage, but this matter is entirely under the supervision of the Common Council, and a garbage inspector has been appointed whose duty it is to see that the garbage is properly disposed of. The plan that is supposed to be carried out is that of having the garbage buried in freshly dug trenches, and as soon as a load of garbage is deposited that it shall be covered with fresh earth. This practice has been going on several years so that a large proportion of the farm has already been utilized for garbage disposal purposes.

Farmers are permitted to take the fresh garbage away in wagons, to be used for the feeding of hogs. At the time of the inspection it was found that very large heaps of tin cans had been sorted from the garbage and from some of these cans, from the foul odors which arose, it was evident that the garbage had not been removed, and that, therefore, a nuisance was caused by storing the cans in the open air. While the inspection was being made two wagons were being filled by farmers with garbage. These wagons were not tight, and the wet materials squeezed from the garbage could leak through on the streets as the wagons were driven to the farmers' homes.

In the lower part of the field it was found that at least ten piles of nightsoil and also the contents of cesspools had been deposited on the ground. Some of these heaps had the appearance of having been deposited within twenty-four hours, others of having been deposited at least a month ago. None of these heaps of nightsoil were covered, and flies were noted as lighting on the various heaps. Foul odors were noticed in approaching the field at a distance of at least 200 yards. There are no houses within 250 yards of the garbage dump, but on Grove street there are a number of houses which, under certain conditions, might be affected by foul odors arising from the dumping ground. Flies feeding on the focal matter would readily go to the houses near at hand.

It was evident from an inspection of the premises that the supervision of the garbage disposal is not what it should be, and that proper care is not being used in the covering of the material, and that there is laxness in carrying out the order that no garbage should be taken from the garbage dump unless it was conveyed in tight wagons.

An order was given by Mr. Wells to the man in charge of the premises to see that the heaps of nightsoil were immediately covered, and that no wagons be allowed to carry garbage unless they are of proper construction.

It is apparent that the system of disposal of garbage and nightsoil in Montclair at the present time is unsatisfactory and that if the present system is to be continued it should receive more careful supervision. The only permanent solution of the problem of disposal of garbage will be in the construction of an up-to-date garbage incinerator.

We respectfully refer this matter to you and trust some action will be taken to improve existing insanitary conditions.

RAPID TRANSIT

Street Car Company Has Broken Contracts

Indianapolis, Ind.—The Indianapolis Traction and Terminal Company has been derelict in its duties to the public and should be forced through public opinion to carry out its contracts for the betterment of the service. This is the conclusion reached by a special committee appointed by the Commercial Club to investigate conditions relating to the street car service. The committee has finished its investigation and has summed up its conclusions as follows:

Many miles of pavement contracted to be laid have never been constructed, and by reason of this default many other miles of pavements have been destroyed.

At least two crosstown lines contracted for eight years ago, and many others that business and residence growth has made necessary have never been built.

The extensions that should have served and developed the suburban districts in all these years have never been constructed. With a few minor exceptions, we are practically just where we were eleven years ago, notwithstanding an increase of 65,000 in population.

Not one of these improvements is asked as a favor or an exhibit in enterprise. Every one of them is the subject of contract, for which the consideration due from the public has been conveyed and received. The company has defaulted, the municipal authorities have failed to enforce the people's side of the contract.

No Private Capital to Build New York's Subways

New York, N. Y.—No bids were received October 20, by the Public Service Commission, for the equipment and operation by private capital of the Tri-Borough subway and elevated system, comprising about 44 miles. The Bradley-Gaffney-Steers Company, which some time ago submitted a proposal for building and operating a part of this system, sent in a letter, which set forth the following:

We regret that we are unable to submit to you to-day a bid in accordance with your invitation for the building of the Broadway-Lexington avenue subway by private capital. The proposed contract submitted to bidders is so different from the proposition which we submitted to you that we do not see how private capital can accept the terms you offer. Our proposition as submitted called for a first lien upon all income for the purpose of making payments of interest and amortization upon private capital invested before anything should be set aside for interest or amortization of city moneys employed. The proposed plan gives no such preference to private capital, and as we outlined to you at the time of the public hearing upon the proposed contract, we believe that this change, so fundamental, is the difference between the success and failure of the plan.

The Commission will on October 27 meet to receive bids for building the subways with funds provided by the city. It is estimated the work will cost \$125,000,000.

MISCELLANEOUS

Public Market for South Bend

South Bend, Ind.—Plans for an official investigation of the public market question will be carried out without delay, Mayor Charles L. Goetz being determined to appoint the commission as soon as he can find the proper men to serve. The committee will be composed of five members and will compile data on the markets in other cities, with information on the probable cost of establishing one in South Bend. The committee will report back to the executive with full information and recommendations. The report will later be presented to the Common Council for possible action.

Steal City Hall Bell

Salt Lake City, Utah.—An historic bell, weighing several thousand pounds, has disappeared from the cupola of the Salt Lake City city hall in which the police department is quartered. Two members of the Fire Department, with headquarters in the same building, are under arrest, and have, the police say, admitted the theft of the bell. They are said to have lowered it to the ground with block and tackle, broken it with sledge hammers and carted it to a junk dealer in a fire department wagon. The junk man grew suspicious when he found the date 1853 stamped on a piece of the brass. The bell was cast in that year by an early Mormon foundry and was the official tocsin through the territorial days.

Chattanooga Opens a New Park

Chattanooga, Tenn.—The formal opening of Jackson Park, located near the road to Rossville, took place last week. Quite an attractive programme was arranged, as it was the last appearance of the Chattanooga Municipal Band



Courtesy Chattanooga Times.

GATEWAY TO JACKSON PARK, CHATTANOOGA, TENN.

for the season. Addresses were made by Mayor Thompson, H. Clay Evans and Dr. S. B. Cook, of the Park Commission. Among the features of the park are two gates, a pavilion and band stand and a winding driveway. Considerable swamp land had to be reclaimed to make the park.

City Planning in Dallas

Dallas, Tex.—At a recent meeting of the Commissioners, Landscape Architect George F. Kessler exhibited a map showing in colors the various elevations of Dallas. One color showed the territory which is less than 400 feet above sea level, one that between 400 and 450, one between 450 and 500 and one that over 500. Mr. Kessler pointed out that the territory of a low elevation, notably that along the river bottom, is sought out by the railroads, which attract the wholesale houses and shipping concerns. Then the lowest has the retail districts, while the highest is for the residence districts, a condition which exists in most cities, he declares.

City Beautiful Montgomery's Aim.

Montgomery, Ala.—The beautifying of the city is to be taken up at once by the new administration, Mayor Gunter having already issued an edict that no electric signs shall be strung across the street, unless they are of a quasi-public nature.

Southwest Washington Wants Improvement

Washington, D. C.—Notwithstanding the advantages that it presents as a commercial center, Southwest Washington is in need of several improvements to stimulate its progress and render it more desirable as a residential section, according to the leading merchants of the locality. These improvements must be made in the near future, the business men of the Southwest urge, as a preventive against disease, if nothing else. Street and alley conditions should be bettered in many parts of the section. It is pointed out that in many places in the streets the water stagnates for days at a time, because of the condition of the asphalt or the cobblestones. This stagnation, the business men say, creates a very unsanitary condition which could be remedied at small cost. Southwest Washington, it is explained, is as modern as any other section of the District with regard to its thoroughfares, excepting in a few localities. Its merchants, however, are opposed to the cobblestones used in certain of its streets, and would have them replaced with asphalt. Another improvement of vital importance to the Southwest is that urged for the water front. Instead of the present 600-foot channel a channel of 800 feet or more is needed to facilitate the river commerce. New wharves are needed in many instances, and ramshackle buildings standing on the water front, which are eye-sores to the section, should be condemned, it is said.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

Remedy for Contractor—Statutes

Wormser-Goodman Construction Company et al. v. Borough of Belmar.—A contractor with a municipality for the erection of a sewage disposal plant may not maintain certiorari to review a subsequent ordinance providing for new plans, for he may sue in equity for the specific performance of the contract, or at law for damages, including profits, resulting from the refusal of the municipality to allow him to carry out the contract, though the ordinance complained of violates the Federal and State Constitutions prohibiting the passage of any law impairing the obligation of a contract. The power conferred by Public Laws of 1907, empowering municipalities to construct sewage disposal plants, is not affected by the supplement to the borough act, dealing with the construction or purchase of a drainage or sewer system including a disposal plant, and enacting that the two questions may be submitted to the voters at one election, and on the same ballot, without requiring the proposition to install a disposal plant to be used in connection with an existing sewerage system to be first submitted to popular vote.—Supreme Court of New Jersey, 77 A. R., 466.

Street Railways—Rate of Fare

City of Philadelphia v. Philadelphia Rapid Transit Company.—Where a street railway company contracted with a city that the existing rates of fare might be changed from time to time, but only with the consent of both parties to the contract, and at the date of the contract the company charged 5 cents for a continuous ride, and sold tickets in strips at the rate of six for 25 cents, and gave free transfers at certain intersections on either cash fares or tickets, the company does not violate the contract by discontinuing the sale of strip tickets without the city's consent. "Rate of fare" ordinarily signifies the unit or basic price on which the total charge is based, and in the carrying of passengers by street railway companies the rate is fixed at a certain price per ride, without reference to the distance traveled, and this price for a single ride is the rate of fare, as the term is ordinarily used, so that the total charge of 25 cents for six rides is not a rate of fare as used in the contract relating thereto.—Supreme Court of Pennsylvania, 77 A. R., 501.

Gas Company—Rights Acquired—Injunction

Gaslight Company of City of New Brunswick et al. v. Borough of South River.—Where an act conferring power on a gaslight corporation has been in force forty years, and gas mains have been laid under its authority for nearly thirty years with the acquiescence of the public, and such acquiescence has encouraged the corporation to extend its gas mains beyond the city limits for the accommodation of the people residing there, the court, on a motion for a preliminary injunction restraining interference with the laying of mains beyond the city limits, will not hold that the right of the corporation to lay the mains does not exist. Where a corporation suing to restrain a municipality from interfering with the laying of gas mains asks for a preliminary injunction, the court on granting the injunction will require the corporation to file a stipulation consenting that the court on the municipality succeeding on final hearing may require the corporation to remove the work done by it pending the litigation.—Court of Chancery of New Jersey, 77 A. R., 473.

Telephone Franchise—Term of Payment

City of Mitchell et al. v. Dakota Central Telephone Company.—A telephone franchise ordinance requiring payment by the company of a percentage of its gross receipts over a certain amount to the city was not repealed by a subsequent resolution granting to the company the right to maintain in the streets and alleys all conduits and cables necessary; it not purporting to repeal or modify such ordinance further than to allow the placing of wires underground instead of upon poles.—Supreme Court of South Dakota, 127 N. W. R., 582.

Patents—Street Flushing Machine

American Street Flushing Machine Company v. St. Louis Street Flushing Machine Co. et al.—The only invention disclosed by the Ottofy patent, No. 795,059, for a street flushing cart, is in the combination with other elements, all of which are old, of a nozzle of such construction and position as to throw the water in a flat sheet nearly parallel with the surface of the street in a forward and lateral direction so as to loosen up the dirt and force it away to the sides of the street, and on an accounting an infringer is liable only for the profits realized from the use of such improved nozzle, over what he might have made by the use of other nozzles that did not infringe. In an accounting for profits a defendant has made by the use of an infringing device which is a mere improvement upon what was known before and was open to defendant to use, the complainant has the burden of proof to separate or apportion the profits made from the patented and unpatented features.—Circuit Court of the United States, 180 F. R., 759.

Bail—Fulfillment of Conditions

City of Atlanta v. Turner.—A prisoner was convicted in a municipal court and sentenced to pay a fine, and additionally to serve a term on the chain gang. He sought certiorari, and gave a bond, with security, conditioned that he should "personally appear to abide the final order, decree, judgment, or sentence" in the case. The certiorari was dismissed and the prisoner surrendered himself into custody and served out the chain gang portion of the sentence, but did not pay the fine. Held, that the condition of the bond was complied with by the prisoner's having duly surrendered himself into custody, and that no action could be maintained on the bond for the purpose of collecting the fine.—Court of Appeals of Georgia, 68 S. E. R., 847.

Street Improvements—Assessments—Damages

Mayor and Aldermen of Birmingham v. Wagenseler.—Birmingham City Charter provides that, if an improvement is finally ordered and constructed, the Mayor and Aldermen, after completion and acceptance, may assess the total expense against the several lots or parcels of land abutting a portion of the streets, avenues or sidewalks, improved, in proportion to the amount of benefit accruing to each, and all such assessments shall be and constitute a lien on the respective lots or parcels of land on which they are levied, etc. Held that, where a street improvement damaged the abutting property and diminished its value by making it more inaccessible, the city could assess no part of the cost of the improvement against such property, which was subject to assessment only for the amount of benefit conferred.—Supreme Court of Alabama, 53 S. R., 289.

Ordinances—Punishment for Violation

Cassidy v. Mayor, etc., of Macon. Lyons v. Same. O'Hara v. Same.—What is known as the "blind tiger ordinance" of the city of Macon specifies the punishment to be imposed (not directly, it is true, but by reference to the charter of the city); hence the punishment authorized by that ordinance is not limited by Code Macon City, which prescribes the penalty for the violation of such ordinances as do not themselves designate the punishment.—Court of Appeals of Georgia, 68 S. R., 862.

Right to Connect with Private Sewer

Pulaski Heights Sewerage Co. et al. v. Loughborough.—Where a sewerage company was organized to build a sewer in certain territory and to rent the right to connect with the sewer, and about one-third of it was built on private property, the courts might require the company to permit a landowner to connect with the sewer for a consideration prescribed by the courts.—Supreme Court of Arkansas, 129 S. W. R., 536.

Failure to Exercise Franchise

People v. Bleeker Street & Fulton Ferry Railway Company.—A franchise for operating a railroad through public streets is disconnected from the corporate franchise of the corporation to which it is granted, and may be forfeited for failure to exercise it.—Supreme Court of New York, 124 N. Y. S., 782.

NEWS OF THE SOCIETIES

League of Mississippi Municipalities

The second annual convention of the State Municipal League was convened in Meridian, October 14, at the Great Southern Hotel for a two days' session. While the number of delegates in attendance was not as great as expected, every principal city of the State was represented. The convention was called to order at 10 o'clock by President A. C. Crowder, Mayor of Jackson. The visitors were then welcomed to Meridian by Hon. Victor W. Gilbert, Mayor Benbrooke of Natchez responding. The annual address of President Crowder followed. He deplored the backwardness of the municipal governments of the State and asked for co-operation of the city officials of all the cities of the State in causing a general uplift of municipal affairs. He advanced a number of pertinent suggestions which met with the hearty approval of those present. "State Reformatory for Boys" was the subject of an address by Dr. J. D. Donald, Mayor of Hattiesburg. His address was strong in advocacy of such an institution in this State. In the afternoon the feature of the session was an address on street grades and draining, by W. G. Wetmore, City Engineer of Meridian, and an address on municipal ownership of waterworks by W. F. Wilcox, superintendent of the city system. Governor Noel, who was in the city attending a meeting of the State normal college trustees, addressed the league. His remarks were on law enforcement, especially as regards liquor law violations. A visit to Highland Park, where a band concert and other pleasures were enjoyed, and a luncheon at the Great Southern Hotel concluded the first day of the convention.

Vicksburg was selected as the next place of meeting, and officers were elected as follows: President, John W. Parker, Mayor of Meridian; vice-president, W. G. Benbrooke, Mayor of Natchez; secretary, M. P. Bouslog, Alderman of Gulfport. Dr. Donald, Mayor of Hattiesburg, spoke of his pleasure at being a charter member of the league and said as he was going out of office in a short time he wanted to express his gratitude to the league for its sympathy and support of a juvenile reformatory, of which he had long been an advocate. The league appointed a committee to memorialize the next legislature in favor of a reformatory. President Parker appointed the following committee: Mayor J. J. Hayes, of Vicksburg; Mayor Benbrooke, of Natchez; Mayor Crowder, of Jackson, and Mayor Donald, of Hattiesburg.

Mayor George M. Foote, of Gulfport, and Mayor J. Donald, of Hattiesburg, were elected honorary members for life. The delegates were given an automobile ride to all the principal points of interest in the city. This included a trip over the recently paved bitulithic streets and a visit to the \$50,000 water reservoir now being constructed by the city. The visitors were also treated to a demonstration by the fire department. Mayor Crowder, of Jackson, retiring president of the league, turned in an alarm from box 13, which is five blocks from headquarters. A truck from headquarters had a stream going in one minute and a half, and a truck from Central school station, 15 blocks away, had a stream in action in four and a half minutes.

Kansas League of Municipalities—

The second annual meeting was held at Wichita, October 12-13. Among the papers and topics discussed were the following: Colonel Lafayette Young, editor of the Des Moines Capital, speaking on the Des Moines plan, said:

Municipalities do not need statesmen. They do not need Clays and Websters. They need men who know how to lay pavements and sidewalks, dig sewers and erect telephone poles. Practical, common-sense men are wanted.

All the legislation needed by a city of a half a million people for any one year could be made by five men in two hours. Then why have a legislative chamber, or what they call a city hall?

The Des Moines plan has done away with the city hall. We are erecting a municipal building, for a modern municipal government. Each commissioner responds at a window, like a bank teller. The humblest citizen can talk to any one of the commissioners. The new plan places the municipal government within reach where the commissioners can be scalped with criticism or given a bouquet and a compliment.

Partisan politics has been the curse of municipal governments. This type of politics is put out of the game by the Des Moines plan.

At a non-partisan primary every man votes. Thus as the result of that primary the ten highest named are put on the ballot for the general election, and from the ten, five are chosen. This is the best primary system ever devised.

Des Moines has prospered under the new city government for nearly three years, and would not think of changing back to the old form of a republic.

The greatest argument against the Des Moines plan in strange cities is that it deprives the poor man of his rights. But the poor man cannot be deceived. He has a referendum. He has the re-call. He has the initiative. He has more opportunities than under the old plan.

The old cumbersome form of city government is as behind the progress of to-day as the ox-cart is behind the automobile.

Within ten years a majority of the American cities will have a commission form of government, and will be doing business in a business way. They will then have a form of government which will give honest public improvements, and give the taxpayers something in return for their money. They will then have a form of city government that is responsive to the public will.

The commission plan eliminates politics, and makes a municipal government a business affair, in which every taxpayer is a stockholder.

It is strange that city governments have not been placed on a business basis years ago. But the time is at hand and the movement for concentration is irresistible.

Dr. G. C. Glynn, Iola, Commissioner of Public Utilities, made an address advocating the inspection of city accounts by the State banking department. The recommendations he made will be put in shape for presentation to the legislature by the legislative committee, of which Dr. Glynn is chairman. Explaining his views in the address, the speaker said:

Each city presents problems peculiar to it alone, and for which there is no precedent. A study of these should be made and the proper allotments should be made in advance by means of a properly constructed budget. In cases where the municipality owns its utilities a store keeping system with perpetual inventory should

be provided so that proper records can be kept of the revenues derived from taxation and from operation of utilities or from any other source. There should be an installation of a complete system of records in the engineering department, department of sanitation, department of streets. A fire record book should be kept wherein should be recorded information concerning fires, a cemetery book should be kept showing titles and giving such other information as would suggest itself to the active city official. The records should be so arranged that their results can be quickly and easily understood, not only by members of the council or commission, but by the citizens at large, without the assistance of an expert. It is, as a rule, easier to compare costs on a unit basis, viz.: per the hour for current, per 1,000 gallons for water, per square yard for street cleaning, etc.

Mayor Abernathy, Leavenworth, spoke on the Collection of City Taxes by the City, advocating the direct collection of taxes on grounds of economy.

Legislation will be recommended on the following subjects: Making it compulsory for cities of the first and second class to be represented at meetings of the League. Fixing the salaries of city officers by the Legislature. Control of public utilities by the cities.

The next annual meeting will be held in Iola. The following officers were elected; C. L. Davidson, Mayor of Wichita, president; J. B. Billard, Mayor of Topeka, vice-president; Professor R. R. Pice, of Lawrence, secretary and treasurer. Trustees—Mayors Frank J. Hess, of Arkansas City; F. L. Martin, of Hutchinson; Omar Abernathy, of Leavenworth.

League of California Municipalities.

The Thirteenth Annual Convention will be held in San Diego, November 15-19. For the first time in the history of the League there will be an exposition of municipal machinery and supplies in connection with the convention. Invitations have been issued to the officials of the cities and towns of the States of Oregon and Washington, Nevada and Arizona to attend the meeting as guests. S. C. Evans, Mayor of Riverside, is president, and H. A. Mason, Pacific Building, San Francisco, secretary.

National Paving Brick Manufacturers' Association—

The twenty-fifth annual convention of the association will be held in Louisville, Ky., early in February, the exact date to be announced later. The Seelbach Hotel will be the headquarters, as it affords ample facilities for the general meeting and those of the affiliated societies. Parties will probably be formed to visit other Southern cities, particularly New Orleans and Jacksonville. Ample facilities will be provided for all the affiliated bodies and for the display of specimen brick and other clay ware, machinery and appliances. The members are invited to suggest topics for discussion and subjects for formal papers touching on any and every phase of the business in which they are interested. Those desiring to join the association or wishing information relative to the requisites of membership are requested to address Theo. A. Randall, the Secretary, or Will P. Blair, President, Indianapolis, Ind.

York Engineering Society.—Members of the society made a trip of inspection October 22 to the McCalls Ferry power plant. The officials of the Pennsylvania Water and Power Company, owners of the plant, showed the visitors over the plant.

League of Third Class Cities of Pennsylvania—A special convention was held at Williamsport, October 19-20, for the purpose of considering the commission form of government. The session was called to order by C. La Rue Munson, president of the Board of Trade. Sixty-nine delegates, representing 30 cities, were in attendance. Mayor Charles D. Wolfe made the welcoming address. The first formal address was made by George R. Wallace, Pittsburgh. He said that local ward representation was the root of all evils in the present form of government of third class cities in Pennsylvania. The number of elective offices should be reduced and liberal compensation should be paid to city officers; elections should be taken out of politics; all officials should be held to the closest accountability. Mr. Wallace has been making some historical researches and has found that the commission form of government which he advocates is no new thing. He read extracts from the charter of Northampton, England, granted by King John in 1200, showing that government by commission was in use in that day. At the conclusion of Mr. Wallace's address Mr. Munson stated that while trying a case in the courts in this city last week he discovered that the city of Lewisburg had a commission government granted to it in the year of 1812 and for 12 years it was governed along that plan.

The principal address of the second day session was delivered by James G. Berryhill, Des Moines, Ia. For two hours Mr. Berryhill held the floor during his address and in replying to questions propounded and kept the attention of the audience throughout. He described the steps leading up to the adoption of the Des Moines charter and explained the practical making of the present city government. Other addresses were: "Government by Commission for Third Class Cities of Pennsylvania," by A. M. Fuller, Meadville; "Does the Administration of City Government Work Well Under Existing Conditions?" by John J. Reardon, Williamsport. At the evening session, John L. Rouse, York, read a letter from Mayor J. P. Weaver, York, expressing his views in favor of a modification of the laws so as to get a better and more businesslike city government; "Advantages of a Short Ballot," by P. A. Hempstead, Meadville; H. E. Paine spoke of the needs of the best class of men that could be got in city governments; "Form of Charter for Cities of the Third Class," by Manley O. Brown. The following resolutions were passed:

Be it resolved by the convention of delegates from the second and third-class cities of Pennsylvania in meeting assembled,

That the commission form of government for the second and third-class cities of Pennsylvania be and is hereby endorsed; and

Resolved, That a permanent organization be effected by the retention of the present officers, viz.:

A. M. Fuller, Meadville, President.

Charles J. Miller, Harrisburg, Vice-President.

Ira W. Stratton, Reading, Secretary, and by the addition of Jacob Umnitz, Erie, Treasurer; and further

Resolved, That a committee of one from each second-class city and one from each third-class city of the State, and one from each borough of 10,000 inhabitants, be appointed by the president on recommendation of each delegation attending the convention, to carry on the work of

this convention after its adjournment, in order that the very excellent and timely suggestions and information gained by the convention may not be lost. Said committee being hereby empowered to meet at the call of the president, to aid in the preparation of such bill or bills for presentation to the next legislature, to appear before the respective committees of the house and senate at the time such bill or bills are under consideration and to generally render such assistance as it deems necessary to have the said bill or bills successfully carried; and

Resolved, That the committee is authorized to adopt by-laws and collect funds to educate the public and carry on the work of the committee herein directed.

American Institute of Electrical Engineers—A meeting was held in the auditorium of the Engineering Societies Building, New York, October 17, to which the public were invited, to discuss the New York subway situation. The principal address was by Frank J. Sprague, past president of the institute. He gave the history and a general description including cost of the present subway system. Coming to the projected tri-borough system, he said it was mistakenly conceived, unwisely promoted and if built will end in financial disaster. In part it would compete with the present system of subways, and it lacks connections to the points at present most needing service, the Williamsburg Bridge and Pennsylvania stations. The physical designs he thought were erroneous as requiring larger cars than the present subway, but not admitting standard railroad cars. The paper was discussed by a number of engineers. W. J. Wilgus thought the specifications for the tri-borough line should be radically revised because of the enormous expenditure under the present plan. L. B. Stillwell indorsed the technical criticisms of Messrs. Sprague and Wilgus. He thought that the subway situation would be best solved by reserving the first level on Broadway for a moving platform, while the adjoining avenues should be used for high speed through trains. W. S. Murray, electrical engineer, New York, New Haven and Hartford Railroad, favored a subway section large enough to accommodate suburban railways cars, but he thought any new line should be combined in the plan of the present underground system. Robert E. Dowling favored the Seventh Avenue route, and said he did not see why subways should be built wide enough to accommodate non-taxpaying commuters. C. K. Thompson said the expense of operating a subway below water level would be great.

Alabama Good Roads Convention—

More than 500 delegates from the 67 counties of Alabama attended the convention, Birmingham, October 12-14. At the opening meeting, John W. O'Neill, president of the Jefferson County Association, presided. Addresses of welcome were made by Job Going, Board of Revenue; Mayor Culpepper Exum; A. H. Ford, president Chamber of Commerce; B. H. Cooper, Board of Trade, and George T. Brazelton, Birmingham Motor Club. President John Crafts, Mobile, in his address, spoke of the past work and future purposes of the association. He presented figures showing the cost of hauling a bale of cotton over good and over bad roads. The total loss due to bad roads he estimated at \$1,400,000 a year, a sum that would finance all the road building needed. Commissioner of

Agriculture J. A. Wilkerson, Montgomery, described Alabama's Road System. Col. Emmett O'Neal discussed the question of the distribution of the cost of constructing roads, and quoted the practice in other States. Dr. W. F. Prouty, chief assistant State Geological Survey, gave an account of the road building materials of the State. W. S. Keller, Dallas County, gave a talk on practical road building. J. T. Fain, editor Anniston Daily Star, spoke on the subject of the Press and Good Roads. A. C. Jackson, Chicago, president National Good Roads Association, spoke of the work of the association he represented. Other addresses were by W. A. Morris, president of the Farmers' Union, on "Convicts on the Public Roads"; H. K. Milner, "Effects of Good Roads on Immigration"; Senators John H. Bankhead and Joseph F. Johnston, on "Goods Roads and Federal Aid"; V. M. Pierce, on "The Good Work Done by Convicts in Virginia, North Carolina, Georgia, Louisiana and Other States"; W. W. Finley, "Influence of Railroads for Good Roads Construction"; R. F. Kolb, "Farmers and Good Roads"; Prof. Edgar B. Kay, dean of the engineering department, University of Alabama, "Stone and Gravel Roads."

The following resolutions were adopted:

(1) That we heartily favor the creation of a department of the State government to be known as the State Highway Commission, to be in charge of a competent and experienced road engineer with a sufficient number of experienced assistants as may be needful to successfully carry out the provisions of the law.

(2) That we favor the most liberal appropriation out of the net revenue of the convict fund which the finances of the State will bear, from year to year, and until the entire net revenue from said convict fund shall be appropriated for the purposes named in said amendment to our new constitution.

(3) We respectfully request and urge upon the representatives of the next legislature of Alabama to pass all laws that are necessary to carry out and put into effect the will of the people as expressed in the adoption of the amendment to our constitution.

(4) Believing that the national government should lend its aid to the cause of improvement in our public highways, and that there is no constitutional objection to such aid, we likewise respectfully urge upon and request our senators and representatives in Congress to use their influence and give their support to the passage of all such laws as may be necessary in the premises.

The following officers were elected:

President—John Craft.

First Vice-President—John O'Neill.

Second Vice-President—H. K. Milner.

Third Vice-President—M. P. Wellborn.

Fourth Vice-President—N. J. Girel.

Secretary-Treasurer—J. A. Rountree.

District Vice-Presidents—First District, A. L. Hasty; Second District, J. H. Coop; Third District, G. N. Mitcham; Fourth District, J. L. Winkle; Fifth District, O. N. Stevenson; Sixth District, Norfleet Harris; Seventh District, W. T. Brown; Eighth District, A. M. McDonnell; Ninth District, W. F. Kelton.

Executive Committee—First District, Dr. P. D. Palmer, Washington; J. L. Moulton, Mobile; Second District, John Gamble, Pike; John V. Smith, Montgomery; Third District, J. B. Lyons, Lee; L. T. Sessions, Dale; Fourth District, J. T. Leeper, Shelby; V. B. Atkins, Dallas; Fifth District, John W. Overton, Randolph; A. T. Goodwyn, Elmore; Sixth District, John H. Bankhead, Walker; W. A. Morris, Lamar; Seventh District, R. A. Mitchell, Etowah; J. M. Kyser, Marshall; Eighth District, Judge William E. Skeggs, Morgan; Oscar G. Simpson, Colbert; Ninth District, Underwood, Jefferson; Frank Y. Anderson, Jefferson.

Municipal Association of Cleveland, O.—A pamphlet has been issued giving the reasons why a new constitution should be drafted. It is set forth that the Ohio tax system must be changed to secure equality; that cities should be given a greater degree of home rule in matters of local interest; and that the old constitution stands in the way of much-needed administrative reforms which cannot be obtained through patchwork amendments. The executive committee of the Municipal Association issuing the pamphlet consists of Morris A. Black, Eckstein Case, A. R. Hatton, Henry F. Lyman, William Howell, Franklin S. McGowan, Dan F. Bradley, Harry Dwight Smith and E. A. Binyon. Mayo Fesler is secretary.

American Street and Interurban Railway Association—The 29th annual convention was held at Atlantic City, October 10-14. Among the papers of general interest to municipal authorities were the following: "The Coney Island Fare Question," by F. R. Ford. The author explained the application to this case before the Public Service Commission of a method of studying valuation from five viewpoints, as follows: 1, Capitalized earning power; 2, market value of securities; 3, approved capitalization; 4, cash investment; 5, reproduction value. In the discussion of this paper, T. N. McCarter, Public Service Railway, Newark, N. J., thought that railroads should be allowed to earn more than 6 or 7 per cent. "The Public Side of Street Railroading" was discussed by Patrick Calhoun, United Railways, San Francisco. He reviewed causes of unfavorable public attitude toward street railway corporations and suggested as remedies full publicity, freedom from political alliances and the establishment of public service commissions. Street Railway Franchises were discussed by Chas. V. Weston, president South Side Railway, Chicago, who urged that the best type of franchise was a monopoly grant fixing the rate of dividend according to the risk in the venture and limiting the capitalization to the legitimate cost of such a product. J. A. McGowan, Indianapolis and Eastern Traction Company, told what interurban railways do for the public. G. E. Trift, Stone and Webster, Boston, discussed "Taxes and Licenses," who maintained that the street railway industry pays a larger percentage of its gross earnings in taxes than does any other corporation or individual. The following officers were elected: President, Arthur W. Brady, Anderson, Ind.; vice-presidents, Thomas N. Carter, Newark, N. J.; George H. Harries, Washington, D. C.; Charles N. Black, San Francisco, and W. G. Ross, Montreal; secretary and treasurer, H. C. Donecker, New York.

Good Roads and Drainage League of South Carolina—Col. James Cosgrove, President of the League, has sent out a circular letter to the officials of the various clubs of the league calling their attention to the "good roads rally" at Aiken on November 2, and urging that the various clubs be well represented. The league was organized at Charleston last July.

Iowa Cement Users' Association.—Secretary Wunderlich, of the Commercial Club, has been advised by Secretary Williams, Ames, Ia., that the next convention will be held at Cedar Rapids, as was the last. The dates set are January 17-20, 1911. Last year the convention brought five or six hundred people to the city.

Calendar of Meetings

- November 14-18.**
National Municipal League.—Annual Meeting, Buffalo, N. Y.—Clinton Rogers Woodruff, Secretary, North American Building, Philadelphia, Pa.
- November 17-19.**
National Society for the Promotion of Industrial Education.—Annual Convention, Boston, Mass.—James C. Monaghan, Secretary, 20 West 44th St., New York, N. Y.
- November 21-23.**
City Commission Congress.—Meeting, Galveston, Tex.—R. E. L. Giles, Secretary, Galveston, Tex.
- December 6-9.**
American Society of Mechanical Engineers.—Annual Meeting, New York, N. Y.—C. W. Rice, Secretary, 27 West 39th St., New York, N. Y.
- December 12-14.**
Association of American Portland Cement Manufacturers.—Annual Convention, New York, N. Y.—Percy H. Wilson, Secretary, Land Title Building, Philadelphia, Pa.
- December 12-23.**
National Association of Cement Users.—Annual Convention, New York, N. Y.—Richard L. Humphrey, President, Harrison Building, Philadelphia.
- December 23.**
New Jersey Sanitary Association.—Annual Meeting, Lakewood, N. J.—J. A. Epton, Secretary, 75 Beech Street, Arlington, N. J.
- December 27.**
American Association for the Advancement of Science.—Annual Meeting, St. Paul, Minn.—L. O. Howard, Secretary, Smithsonian Institute, Washington, D. C.
- February 1-3.**
Nebraska Cement Association.—Western Cement Exposition, Omaha, Neb.—Peter Palmer, Secretary, Oakland, Neb.
- May 29.**
American Water Works Association.—Annual Convention, Rochester, N. Y.—J. M. Diven, 14 George St., Charleston, S. C.

PERSONALS

BAKER, WILLIAM F., Police Commissioner of New York City, has resigned, and James C. Cropsey, of Brooklyn, a lawyer, has been appointed in his place; Clement J. Driscoll, Commissioner of Weights and Measures of the city, has been named as First Deputy to succeed Frederick H. Bugher, and William J. Flynn, for the past thirteen years in the United States Secret Service and for eleven years in charge of the New York office, succeeds Second Deputy Charles W. Kirby, and will have personal charge of the Detective Bureau.

BEAN, JOSEPH, Alderman of Haverhill, Mass., has resigned and will oppose Mayor Edward F. Moulton, who has been in office since the adoption of the commission form of government, for re-election.

BEMIS, EDWARD W., Deputy Commissioner of Water Supply of New York City, who was Superintendent of Water of Cleveland, O., during the administration of Mayor Tom L. Johnson, has been removed from office by Henry S. Thompson, Commissioner of Water Supply, Gas and Electricity, when he declined to resign; politics is back of the trouble.

COLBURN, A. E., International Falls, Minn., has been elected Mayor under a new home-rule charter; R. C. Fraser, City Clerk; and N. L. Olson, Treasurer; also the following Aldermen: Alfred Setterlund, H. I. Bedell, Harry Gordon, Pat Lynch, F. G. Nelson, Frank Carrier, G. E. Coventry.

DAVIS, PROF. JOSEPH B., associate dean of the Civil Engineering Department of the University of Michigan, tendered his resignation Oct. 8 and was made Professor Emeritus of Surveying by the Board of University Regents. Professor Davis

has been connected with the university since 1872. He was born at Westport, Mass., in 1845, and was graduated from the University of Michigan in 1868.

ENGLAND, GEORGE, Chief of Police of Colgate, Okla., was shot and killed as he was leaving a restaurant by Park Thompson, following a feud.

GILLESPIE, R. H., New York, N. Y., formerly engineer for the John J. Hart Company and the F. V. Smith Contracting Company, New York, has been appointed Chief Engineer of Sewers and Highways, Borough of The Bronx, New York. Mr. Gillespie was in the city service before his connection with the contractors.

HARTWELL, DAVID A., City Engineer of Fitchburg, Mass., for the past twenty years, has resigned to become Chief Engineer to the Sewage Disposal Commission of that city; under this Commission Mr. Hartwell will have charge of the planning and construction of an intercepting sewer about six miles long, a disposal or purification works and the changing of the present sewer system of forty miles from a combined to a separate system.

JACKSON, WILLIAM, Cincinnati, O., a member of the detective force, has been appointed Chief of Police by Mayor Schwab, vice Paul M. Millikin, who was dismissed, following an investigation, when he refused to resign.

MCCULLOUGH, ERNEST, Consulting Engineer, specializing in municipal work, has moved his office to the Fisher Building, Chicago.

MOORE, CLEM G., Crawfordsville, Ga., has been elected Mayor, with S. E. Gunn, J. R. Asbury, J. S. Jackson and V. S. Allen as members of Council.

NASH, F. D., Manila, P. I., has been appointed Principal Assistant Engineer of the sewer and waterworks construction for the city of Manila. He was formerly Division Engineer, Bureau of Public Works, Philippine Islands.

O'CONNOR, JOHN F., Chief of Police of Columbus, O., until January 1 last, when he was reduced to the ranks when George S. Marshall became Mayor, took the highest rank in an examination for Sergeant against ten competitors and will be certified for the position; he has been in the Police Department fifteen years.

ORGAN, LOU, Lawrenceville, Ill., a member of the police force, has been appointed Chief, vice Dan Thorn, resigned.

POWELL, GEORGE M., Jacksonville, Fla., an attorney, has been elected as a member of the Board of Public Works by the Board of Bond Trustees, succeeding Nathan P. Bryan, resigned.

PARSONS, FREDERIC T., New York, N. Y., has been appointed Deputy Water Commissioner of Brooklyn, succeeding William C. Cozie. Mr. Parsons has been Deputy Water Commissioner of Queens.

PERKINS, EDMUND T., Chicago, Ill., has formed the Edmund T. Perkins Engineering Company, First National Bank Building, Chicago, for the purpose of examining constructing and reporting upon engineering works, especially for irrigation.

POTTER, ALEXANDER, New York City, Consulting Engineer, has been in conference with City Engineer Clontz and other officials of Muskogee, Okla., relative to preliminary plans for a large intercepting sewer.

WILSON, CLARENCE B., Mayor of Glen Echo, Md., has resigned in order to go West, where he will engage in business. Otho F. James, member of the Town Council, has been elected to serve out the unexpired term.

TRADE NOTES

Cast-Iron Pipe—Chicago: Several large contracts have been closed and there is a fair run of orders from cities that bought early in the year and need additional pipe to complete their work. Quotations: 4-inch, \$27; 6 to 12-inch, \$26; 16-inch and up, \$25. Birmingham: The aggregate of small orders is less than expected during last few weeks. Stocks are accumulating at the plants. Quotations: 4 to 6-inch, \$22.50; 8 to 12-inch, \$21.50; over 12-inch, \$20.50. San Francisco: A number of fair inquiries for municipal work have been received. New York: A much better feeling prevails in trade circles. Quotations: 6-inch, carloads, \$22.50 to \$23.50.

Lead—A fair demand for lead has developed. Quotations: New York, 4.40-4.45c.; St. Louis, 4.25-4.27c.

Pumps—The Moline Pump Company has definitely decided to locate its new plant at Ottumwa, Ill. It will be erected at a cost of \$45,000 and will include a two-story warehouse and office building, 80 x 150 ft.; a foundry, 80 x 120 ft.; machine shop, 100 x 200 ft.; engine room, 40 x 60 ft., and a paint shop, 60 x 80 ft.

Steam Shovels—The Marion Shovel & Dredge Company, Marion, Ohio, has broken ground for its new plant, which it is expected will be ready for operation in February. At present four shop buildings will be erected. These will include a machine shop and erecting room, 120 x 210 ft.; a blacksmith and structural shop, 60 x 210 ft.; a carpenter shop, 60 x 112 ft., and a power house, 60 x 100 ft. The plant will have a capacity of 10 shovels per month. A. E. Cheney is general manager and secretary of the company.

Portland Cement—The Tidewater Portland Cement Company, Union Bridge, Md., has placed an order with the Wisconsin Engine Company, Corliss, Wis., for three horizontal cross compound engines, with cylinders 23 and 43 in. by 48-in. stroke, to be operated condensing; speed, 100 rev. per min. Each will be direct connected to a three-phase 60-cycle alternating current generator of 925 k.v.a.

Hydroelectric Plant—The Power Engineering Company, Minneapolis, has presented a report to the city authorities at Marshalltown, Iowa, by whom it was engaged for the purpose, outlining plans for a hydroelectric plant to be used in municipal lighting service.

Traction Engines—During 1908-9, which were lean years in the lumber business and the agricultural machinery line, the A. B. Farquhar Company, of York, Pa., took advantage of dull times to redesign some of its products and to improve its manufacturing facilities, with the result that its latest catalogue describes many novelties for contractors. In addition to its standard traction engine a new double cylinder engine for general road work and hauling is illustrated, the large line of semi-portable and stationary boilers and engines is shown in detail, and there is a section devoted to saw-mill machinery. One of the company's specialties is the manufacture of horizontal and vertical boilers of all types used by contractors.

Manufacturing Sites—In order to inaugurate the campaign for new industries recently planned, the McKeesport Chamber of Commerce, McKeesport, Pa., has offered a tract of 20 acres to be used for the sites of plants intending to locate there.

Venezuelan Asphalt and Oil Concession—A concession has been granted by the Venezuelan Government for the exploitation of asphalt, oil and similar products on various islands on the coast of that country. This is an important concession and gives the company now operating asphalt rights at Guanoco, in the same district, the control of what are considered the richest oil and petroleum deposits of Venezuela. These deposits no doubt have subterranean connection with those of the island of Trinidad. It is understood the company will begin immediately work of boring for oil and location of the asphalt deposits known to exist there. A copy of the concession may be secured from the Bureau of Manufactures.

Fire Engines—Announcement has been made of the change of the name of the Ahrens Fire Engine Company to the Ahrens-Fox Fire Engine Company. This, it is stated, in no manner affects the company as originally incorporated under the laws of the State of Ohio. Mr. Fox has long been identified with successful fire-engine practice, and to supply reliable engines for modern fire department needs will be the constant aim of all who are associated with The Ahrens-Fox Fire Engine Company, which desires to continue established relations and will also seek to increase the prestige gained from its former endeavors. The board of directors consists of Charles H. Fox, president; John P. Ahrens, vice-president; George W. Krapp, secretary and treasurer; W. H. Shafer and August H. Tuechter.

Paving in Montevideo—The present stone-covered streets of Montevideo are to be replaced with asphalt. Consul F. W. Goding wrote under date of August 20 that bids would be opened on September 20 for the contract. These short-time announcements for tenders for public contracts preclude bids from Europe or United States except firms represented in Uruguay. However, the new street work may afford an opening for American tools and machinery adapted thereto.

Power Pumps—In sectional catalogue No. 229; illustrating and describing Buffalo power pumps, an endeavor has been made to list all usual types of power pumps as are used in ordinary service. These include single, duplex and triplex pumps of various designs adapted to many kinds of work. Buffalo power pumps are manufactured by the Buffalo Steam Pump Co., Buffalo, N. Y.

Pumping Station—The Erie City Iron Works, Erie, Pa., manufacturer of steam engines, boilers and feed water heaters, has been awarded a contract for a pumping station for the Eldred Drainage district, Hardin, Ill. The pumps will have a capacity of 150,000 gal. of water per minute.

Sewer Pipe—The Zoar Fire Clay Company, in which E. F. Houser and others are interested, is being organized in New Philadelphia, O., to build a brick and sewer pipe plant in Zoar, O.

Sewer Pipe—The American Sewer Pipe Company has begun work on its new \$125,000 plant at Brazil, Ind. It will manufacture there the largest sewer pipe ever made from clay.

Hendricks' Commercial Register—The nineteenth annual revised edition of Hendricks' Commercial Register of the United States for Buyers and Sellers has just been issued by S. E. Hendricks Co., 74 Lafayette Street, New York City.

Water Company Profits—The Pottsville Water Company, Pottsville, Pa., the oldest corporation in the Schuylkill, chartered in 1828, declared a dividend doubling its capital stock. The original amount of the corporation's stock was \$200,000. The Pottsville Water Company has the largest storage capacity in the anthracite region in four big reservoirs, and while other places in the upper State have been experiencing drought stringencies, this corporation has had plenty of water. This year it completed a new 300,000,000-gallon reservoir at Wolf Creek, near St. Clair.

Air Compressors—Sullivan air compressors are described in three bulletins from the Sullivan Machinery Company, 150 Michigan Avenue, Chicago, Ill. Bulletin 58-D takes up tandem Corliss compressors, and has notes on coal consumption, relative steam economy and working strains. Capacities of this type range from 909 to 2450 cu. ft. of free air per minute. In Bulletin 58-F, which describes small air compressors for special purposes, a portable gasoline-engine-driven outfit and a motor-driven outfit mounted on a mine truck are shown. Bulletin 58-G describes duplex air compressors of both power and steam-driven types. Each bulletin gives a table of capacities and dimensions of the type to which it refers.

Rubber Tires—Of interest to Fire Departments having horse-drawn runabouts is a booklet just issued by the Firestone Tire & Rubber Co., Akron, O., on the subject of solid rubber tires. The book is printed in three colors and the tire illustrations are carried out in double duo-tone effects. Attention is called to the fact that the Firestone organization devotes its attention to rubber tires exclusively; a special emphasis is placed upon the firm fastening and the wear-resisting quality of the leader of the Firestone line—the side-wire tire.

Insulating Materials—The question of the selection of insulating materials for transmission lines is of increasing interest to municipal authorities because the high voltage currents now used are introducing new elements of danger to life and property, particularly within city limits. The Locke Insulator Mfg. Co., Victor, N. Y., in their Insulator Book, explain that the terms conductor and non-conductor are merely relative. Glass is not a safe insulator for high voltage currents. Porcelain has the advantage of high insulating power and practical indestructibility under atmospheric conditions. It is a product of flint and feldspar fused into a homogeneous mass at an extremely high temperature.

Refuse Destructors—The Destructor Co., 111 Broadway, New York, N. Y., has recently issued an attractive bulletin describing the 300-ton per day Heenan High Temperature Refuse Destructor, which they have recently completed for the City of Milwaukee, together with a copy of the official tests on same. One of these furnaces has also been in successful operation for over two years in the Borough of Richmond, N. Y., destroying the mixed refuse in an absolutely sanitary and economical manner. The cities of Buffalo, N. Y.; Westmount, Canada; Seattle, Wash., and Vancouver, B. C., also have High Temperature Destructors, and the same company is now installing a 60-ton plant in Montgomery, Alabama. In Great Britain there are 126 municipal installations of Heenan or Mildrum destructors, and 21 in other parts of the world.

MUNICIPAL APPLIANCES

Expanded Metal for Sewer Reinforcement

In a booklet of designing data for the use of expanded metal, the North Western Expanded Metal Co., Old Colony Building, Chicago, Ill., has the following to say regarding the use of their product in sewer reinforcement.

Sewers and drains of concrete are generally made with a shell equal in thickness to one-twelfth of the diameter up to twelve inches in diameter without reinforcement. From twelve to twenty inches in diameter the thickness is one-tenth the diameter. Over twenty inches the thickness is one-eighth the diameter and after a diameter of thirty is reached it is possible to begin reinforcing the sewers and save concrete. Until the shell reaches a thickness of three inches there is no saving in using reinforcement, for the slight economy in thickness made possible by reinforcement will not amount to the cost of the steel.

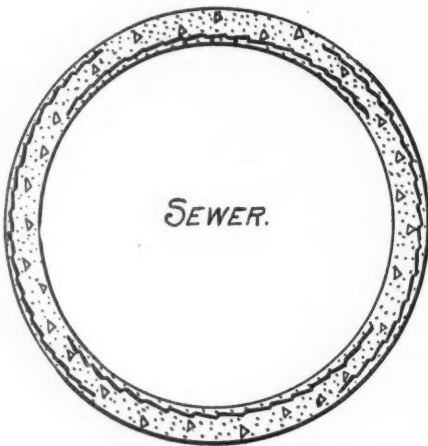


DIAGRAM SHOWING LOCATION OF REINFORCEMENT IN CONCRETE SEWER

One-eighth the diameter makes the thickness of a two-foot sewer three inches, and a thirty-inch sewer will be practically four inches. The thickness may be kept down to three inches and the cost of the steel will be less than the concrete saved.

The expanded metal should be placed with the length of the diamond on the circumference. It has been placed in a number of sewers with the diamonds parallel with the bore, but such rein-

forcement is not economical. The accompanying table has been carefully computed to provide for all contingencies that may arise in sewer construction and the reinforcement here provided may be safely used.

Inside Diam-eter.	Thick-ness of Con-crete.	No. of Ex-panded Metal.	Inside Diam-eter.	Thick-ness of Con-crete.	No. of Ex-panded Metal.
2' 6"	3"	15-3	5' 0"	4"	30-3
3' 0"	3"	20-3	5' 6"	4½"	30-3
3' 6"	3"	20-3	6' 0"	5"	35-3
4' 0"	3"	25-3	6' 6"	5½"	35-3
4' 6"	3½"	25-3	7' 0"	6"	40-3

Same reinforcement for egg-shape sewers; the horizontal diameter being that given in the table.

Referring to the table and the accompanying illustration it will be seen that on the bottom and top the steel will lie within an inch of the inside surface of the shell. On the sides the steel will lie within an inch of the outside surface. The first column gives the inside diameter; the second column the thickness of concrete and the third column the number of expanded metal to use. There are four sheets, each of which is equal in length to the inside diameter of the sewer, thus providing a good lap at the critical points.

It is really preferable to have two layers of steel, one next the inside face and one next the outside face. It is impossible to tell in advance from which point the pressure is likely to be most severe on a buried structure and double reinforcement will provide for all contingencies. If this double reinforcement is used the expanded metal may be one grade lighter. For example, where No. 15-3 is called for in the table we may use No. 10-3 if in two layers.

The concrete may be a 1-2-5 mixture, unless it is desired to have a practically water tight job, in which case it should be 1-2-4 or 1-2-3. The largest stones should not exceed three-quarters of an inch in any dimension.

Snow Plows

THE Moore improved snow plow, invented and patented three years ago, is made by the Moore Specialty Manufacturing Co., 601 Majestic Building, Detroit, Mich. The plow is built of the best material obtainable. The concave mould boards are made of steel, built to a form and properly moulded to secure the correct

result for rolling the snow away. The plow is braced and strengthened with steel and all points are made of malleable iron. This construction rolls the snow away and prevents clogging or sticking (either wet or dry), always keeping the plow flush with the hard surface without extra weight.

The sled feature enables the operator to raise

or lower the snow plow by means of a lever directly in front of the handles. By pulling back on the lever the plow raises and rests on the sled; this is a great convenience while crossing curbs, ruts, etc. Also makes it easy to transfer from place to place.

The standard sizes vary according to the width of walks and are ordinarily 5 or 6 feet. These are non-adjustable, but include pole and shafts.

The Moore special plows are made adjustable and are used in places where the widths vary from 6 to 11 feet. The plow is easily adjusted to the proper width by a set screw on the cross bar.

Designed especially for use in the business districts where the snow is to be swept in one direction, thereby keeping your store entrance clean. The snow plows are built in sizes to sweep from 6 to 12 feet.

The Moore curb is built of heavy steel with a malleable point, used for keeping gutters clean. The plow is 24 inches wide.

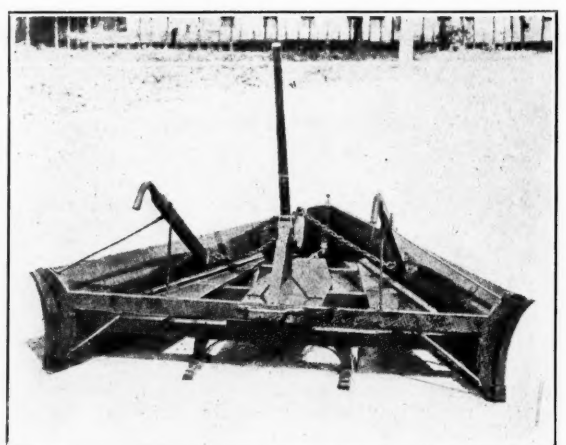
The plows are sold either with pole or shafts, which are hung on a swivel, making it easy to turn sharp corners or curves. The ordinary standard size being 5 to 6 feet, are recommended shafts, as one horse can easily pull the plow through 2 to 3 foot snow banks.

Reinforced Concrete Pipe

A PAMPHLET issued by the Reinforced Concrete Pipe Company, of Jackson, Mich., gives the results of a series of tests conducted at Dorrance-ton, Pa., on the company's 24-in. pipe for the main sanitary outlet of that borough; the tests were made by Messrs. Smith & Wells, consulting engineers, Wilkes-Barre, Pa. The pipes were each 36 in. long and the shell 2½ in. thick, the gravel concrete mixture being 1:2½:5. The pipes were buried one-half their depth and loaded with steel sheeting carried by cradles cushioned on the pipe surface with burlaps. The first pipe was one 30 days old, which had been condemned on account of longitudinal cracks; it sustained a load of 18,326 lb. at failure. The second test was on an 18-day old pipe; a loading of 13,544 lb. developed hair cracks at top and bottom. Failure occurred at 26,160 lb. The third pipe tested was 30 days old; at 12,800 lb. hair cracks appeared, and failure occurred at 35,997 lb. The Reinforced Concrete Pipe Company is also distributing a set of specifications for reinforced concrete pipe which it recommends for most purposes.



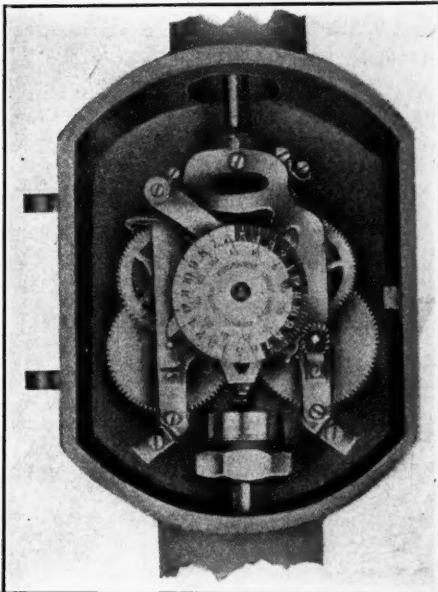
FRONT VIEW, SHOWING THE CONCAVE MOULD BOARDS



REAR VIEW, SHOWING HANDLES AND LEVER FOR RAISING AND LOWERING

Street Lamp Lighter

THE Independent Street Lamp Lighter, made by the Independent Street Lighter Company, Old South Building, Boston, Mass., is an automatic device for lighting and extinguishing street gas lamps at any time of day or night. It is operated by an 8-day double-spring clock movement. The clock movement is accurately timed and adjusted. While the clock is an 8-day movement it only requires winding about once in 11 days. The valve is attached to a separate spring and requires winding about once in 14 days, consequently, if the clock and valve springs are wound once a week it assures an absolutely perfect performance of the lighter. The clock is fitted in a metal case which may be attached to



INDEPENDENT STREET LAMP LIGHTER

the regulation lamp post and the lamp (either for inverted or upright mantle) is attached to the top of the clock case. The mantle is lighted by a pilot light which is extinguished when the main burner is turned on and which lights again when the main burner is turned off. This pilot light is so housed and protected that there is no danger of rain, snow or wind putting it out. The lighter can be arranged to use self-lighting mantles, in which case the pilot light would be removed. The indicator dial is so arranged that a slight movement of the finger changes the time of lighting and extinguishing, but these cannot move unless changed by

the attendant. The dials for lighting and extinguishing are entirely independent. The lamp could be lighted at seven and extinguished at eight if need be. Most cities require the time for lighting and extinguishing to be changed once a week. The man on his weekly round to wind the clocks makes this change on the dials. After this is done the clock requires no further attention until wound and set the following week. These lighters are being tried and are in use in several cities and towns throughout the country and have given perfect satisfaction.

Electric Light Columns

PLAIN and ornamental electric light columns are made in a large variety of patterns by the J. W. Fiske Iron Works, 56 Park Place, New York. The shaft shown on the right in the cut, arranged for one electric ball, is 8 feet 2 inches in height to the bottom of the electric ball. The base is 16 inches square. The illustration on the left shows a lamp post for three lights; it is 8 feet high to the bottom of the center electric ball. The base is 3 feet 2 inches wide. This column may be used without the brackets. All posts may be painted or bronzed.



ORNAMENTAL LIGHT COLUMNS MADE BY
J. W. FISKE IRON WORKS

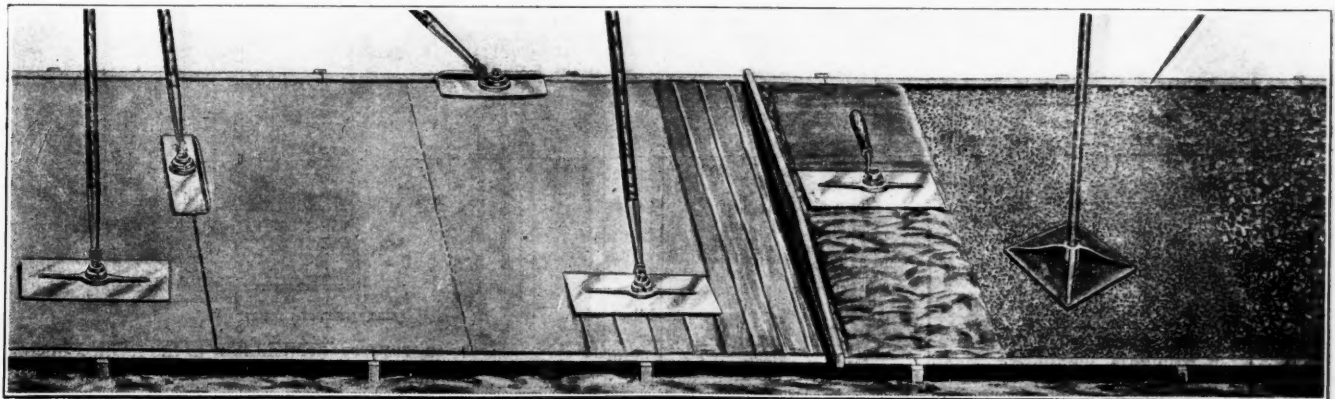
Long-Handled Concrete Sidewalk Tools

THE Arrowsmith concrete finishing tools made by the Arrowsmith Concrete Tool Company, Arrowsmith, Ill., are claimed to be the only accepted tools of their kind ever placed on the market. The manufacturers are so confident regarding their success that they claim that within five years' time short-handled tools will have gone out of use. The accompanying illustration shows the complete outfit and gives an idea of the way they are used in sidewalk construction. The convenience of doing the work in a standing position results in increased speed of the finishers, and besides they do not have to wait for the cement to set. It is stated that a man thoroughly accustomed to the use of these tools can finish 1000 feet of four-foot wall in 25 minutes. The outfit of tools consists of one trowel, one tamper, one jointer and one edger, two long adjustable handles, one emergency handle, one wrench, one straight edge. The method of using these tools is as follows: As soon as the top coat is poured on, cut it off flush with the top of the forms. Then go over it with the straight edge, cutting back and forth in order to get the top as nearly even as possible. Then begin at once with the long handled trowel, pushing it across the walk. If

the top is very soft do not bear down on the handle, but let the trowel carry its own weight. Keep the forward edge $\frac{1}{4}$ inch above the surface of the walk. The preliminary troweling done, adjust the edges on the long handle and run it along the frame, keeping the forward end above the surface. This tool has a knife edge and cuts its way through the mortar instead of plowing. Before using the jointer it should be perfectly adjusted. With this tool a workman can either trail a straight edge or cut the joint with a point trowel and run it free. The jointer, like the edger, it is claimed, will polish on the second stroke. After the edging and jointing have been completed, the whole walk should be run over rapidly with the trowel.

Portable Acetylene Lights

PORTABLE acetylene lights for the use of Fire Departments, construction companies or others who work at night or in dark places are made by the Alexander Milburn Co., 507 N. Lombard street, Baltimore, Md. The apparatus consists of three principal parts, an outer tank holding water, an inner tank holding calcium carbide, and a burner standpipe. The lights are small and compact in size, being one-half the weight of oil lights of equal power.

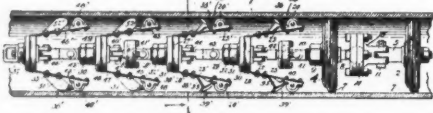


CEMENT SIDEWALK IN PROCESS OF CONSTRUCTION, SHOWING USE OF ARROWSMITH LONG-HANDLED CONCRETE TOOLS

PATENT CLAIMS

971,042. APPARATUS FOR CLEANING WATER-PIPES. Nicholas S. Hill, Jr., and Burt B. Hodgman, East Orange, N. J., assignors to National Water Main Cleaning Company, a Corporation of Maine. Serial No. 441,220.

In a pipe-cleaner, the combination of a shaft, a set of rearwardly extending and



outwardly inclined resilient carriers, and a tool for acting upon the deposit in the pipe mounted on each of said carriers with capacity of adjustment lengthwise the carrier on its inclined part, whereby the edge of the tool may be adjusted relatively to the interior of the pipe.

971,400. CORRUGATED METAL CULVERT. Joseph Ralph Orwig, Des Moines, Ia. Serial No. 414,090.

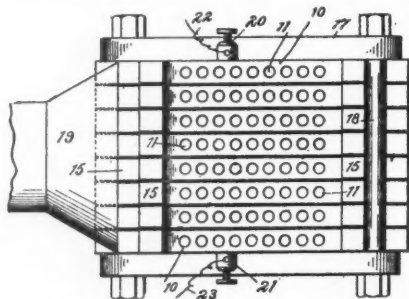
An improved culvert, formed of a single piece of sheet metal arranged in tubular form and having one longitudinal edge overlapping the other longitudinal edge and connected therewith by means such as rivets, said culvert being provided throughout



its entire length with reinforcing corrugations arranged spirally to strengthen the culvert and to form screw-threaded ends, one end being provided with transverse slots and the other with holes to receive fastening means such as bolts to connect the two sections together.

971,244. APPARATUS FOR OZONIFYING. Charles S. Bradley, New York, N. Y. Serial No. 341,120.

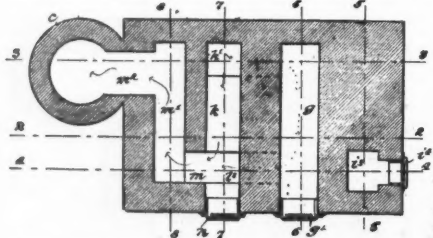
An ozonifier comprising a plurality of



electrodes and dielectrics spaced between them, said dielectrics being twice as thick as the width of the spaces between them and the electrodes.

973,314. INCINERATING FURNACE. Frederick L. Stearns, New York, N. Y. Serial No. 271,765.

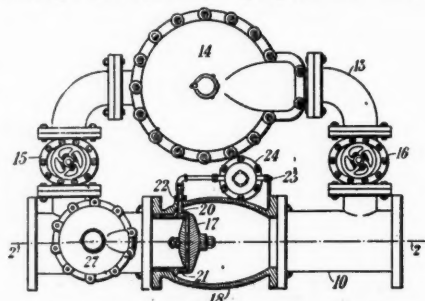
The combination of a main combustion-chamber having a grate, a supplemental combustion-chamber, located under the said grate and extending crosswise of the main combustion-chamber and also having a grate, and two combustion-supporting or coal-burning chambers, one for each of said combustion-chambers located near one end and laterally to one side only of its



given combustion-chamber, and having an opening into the side wall of its given combustion-chamber; said combustion-supporting or coal-burning chambers being arranged in a vertical plane, transversely of the main combustion-chamber, at the outer side of the supplemental combustion-chamber, and said openings being located in the forward lower corners of the main combustion-chamber and the supplemental combustion-chamber, substantially as and for the purposes set forth.

971,510. METER SYSTEM. James A. Tilden, Hyde Park, Mass., assignor to Hersey Manufacturing Co., South Boston, Mass., a Corporation of Maine. Serial No. 467,390.

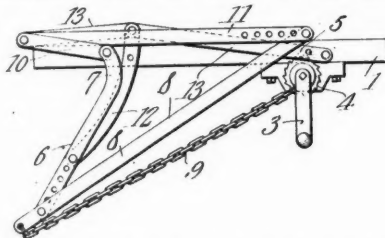
In a meter system; a main conduit; a primary by-pass communicating therewith; a meter included in the primary by-pass and operable by a relatively small flow through the system; a proportional meter



comprising a diaphragm in the main conduit between the openings of the primary by-pass, a secondary by-pass about the diaphragm, and a meter in the secondary by-pass, the diaphragm being provided with an opening closely approximating in diameter that of the main conduit, thus offering practically no resistance to flow therethrough and consequently being effective to divert a measurable quantity of liquid through the secondary by-pass only upon a relatively large flow through the system; and a check-valve situated in the main conduit between the primary by-pass openings and adapted to normally hold said main conduit closed and to open when a flow occurs sufficient to operate the secondary by-pass meter.

973,055. WAGON BODY - DUMPING MECHANISM. Earl P. Le Gore, Philadelphia, Pa. Serial No. 549,092.

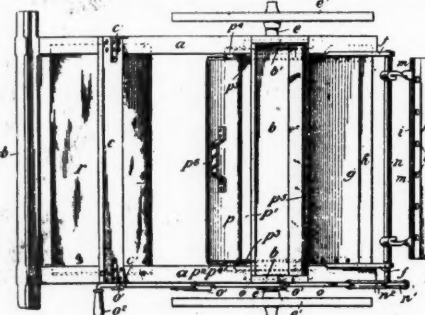
A wagon body dumping mechanism comprising a beam, a winding device located thereon, a link pivoted at its end to the beam, a lever fulcrumed at a point between its ends to the lower end of said link, a flexible member connected with said lever at a point below its pivotal connection with said link and adapted to wind upon said winding device, a link pivotally connected with the beam at the same



point as the pivotal point of the first said link, a link pivotally connected at its rear end with the second mentioned link and pivotally connected at its forward end with the upper end of said lever, toggle links pivotally connected together one of said links pivoted at its forward end to the said beam and the other said link pivoted at its rear end with the second and third mentioned links at their points of pivotal connection and a link pivotally connected with the first mentioned link and pivotally connected with the toggle links at their points of pivotal connection.

973,091. STREET-CLEANING APPARATUS. Samuel Whinery, East Orange, N. J. Serial No. 550,047.

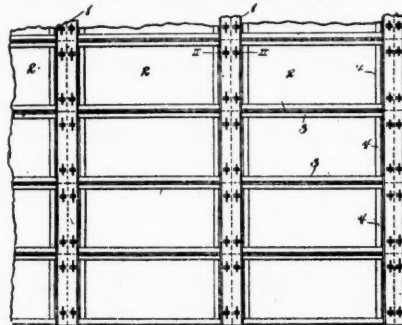
A street cleaning machine comprising a wheeled frame, a scraper with a curved bottom plate, a dirt receptacle adjacent to the upper edge thereof, a broom mounted



to swing about the center of curvature of the bottom plate, and means including an operating handle for oscillating the broom.

972,803. CONCRETE-RETAINING WALL. Jacob B. Blaw, Pittsburg, Pa., assignor to Blaw Collapsible Steel Centering Company, Pittsburg, Pa., a Corporation of New Jersey. Serial No. 473,893.

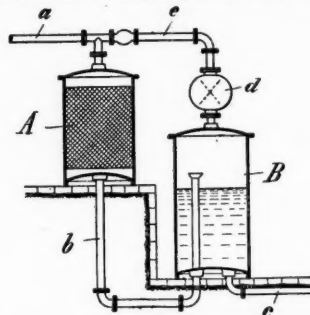
In combination, a concrete retaining wall comprising spaced channel bars with their flanges projecting inwardly, and having their body portions intermediate the flanges provided with perforations, lagging com-



prising plates abutting at the backs of the channel bars and provided with loops in proximity to their abutting edges projecting through the said perforations, and wedges for the loops.

973,263. APPARATUS FOR FREEING WATER FROM ITS CONTAINED IRON IN A CONTINUOUS CIRCUIT. Ludwig Heinrich Darapsky, Hamburg, Germany, assignor to the firm of Deseniss & Jacobi Aktiengesellschaft, Hamburg, Germany. Serial No. 501,182.

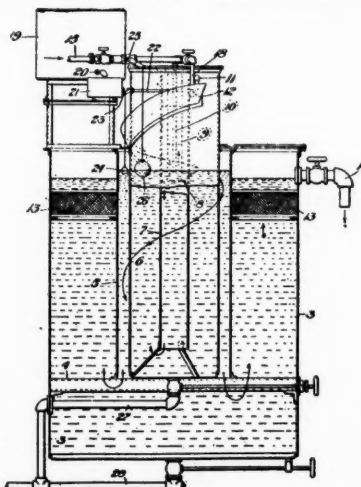
In an apparatus for purifying water, a closed filter, a closed separator for air and water separate from the filter and into which the filter discharges, means to pump



air from the separator to the filter and means to supply water to the filter with the air.

973,424. WATER-PURIFYING APPARATUS. John C. W. Greth, Pittsburg, Pa., assignor to Wm. B. Schaife & Sons Company, Pittsburg, Pa., a Corporation of Pennsylvania. Serial No. 435,059.

In water purifying apparatus, the combination of a settling tank, an open ended shell therein, a saturating vessel inside of said shell and forming between it and the shell a reaction chamber, re-agent feeding means in said vessel, means providing for



a reverse vertical flow in the feeding means and also through the saturating vessel, an overflow outlet therefrom into the annular re-action chamber, and means for discharging said overflow into the reaction chamber and simultaneously mixing water therewith, substantially as described.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Nebraska	Lincoln	Oct. 28, noon	Paving District No. 187 with vitrified brick	R. C. Ozman, City Clerk.
Connecticut	Bloomfield	Oct. 28, 2 p.m.	Repairing 5,000 lin. ft. macadam road, Bloom'd ave. to W. Hfd.	Geo. F. Hubbard, Chm. Selectmen.
New York	Long Island City	Oct. 29, 11 a.m.	Regulating and repav. with granite block on concrete base.	Lawrence Gresser, Boro. President.
Wisconsin	Racine	Oct. 29, 10 a.m.	Brick paving, 1,320 sq. yds.; comb. curb and gutter, 720 lin. ft.; brick paving, 431 sq. yds.; Sarco mineral rubber paving, 2,324 sq. yds.; comb. curb and gutter, 1,443 lin. ft.	P. H. Connolly, Chm. Bd. Pub. Wks.
Ohio	Cleveland	Oct. 29, 11 a.m.	Grading and improving Ledge Hill on Som Center rd.	Frank R. Lander, Co. Surveyor.
Utah	Logan City	Oct. 29, 4 p.m.	Pav. 28.5 blocks in Paving Dist. No. 18; 5 annual payments.	Wm. Worley, Chm., S'wks & Pav. Com.
Tennessee	Nashville	Oct. 29, 11 a.m.	Grading road 6,226 ft. long from Lickton to Wilkerson road.	W. M. Pollard, County Judge.
Nebraska	Plattsmouth	Oct. 31, noon	Grading various county roads.	D. C. Morgan, County Clerk.
Washington	Spokane	Oct. 31, 2 p.m.	Improving three streets.	J. C. Argall, Sec'y Bd. Pub. Wks.
New York	Fort Niagara	Oct. 31, 11.15 a.m.	Building concrete walks, macadamized and clay roads at Fort.	Lieut. E. H. Wagner, U. S. Army.
New York	Inlet	Oct. 31	Constructing public road from Sixth Lake dam to Limekiln lake.	Frank E. Tiffany, Chm. Town Board.
Iowa	Lorimer	Oct. 31, 8 p.m.	Bldg. cement street and alley crossing and sidewalks for year.	H. L. Albert, Town Clerk.
Virginia	Portsmouth	Oct. 31, noon	Laying 71,350 sq. yds. pavement; five materials, 32,544 lin. ft. new curb, all granite or 28,196 lin. ft. conc. comb. curb and gutter and 4,348 lin. ft. conc. curb.	E. B. Hawks, Chm. St. Com.
Minnesota	Mankato	Oct. 31, 10 a.m.	Constructing sidewalks, check for 10 per cent.	A. H. Scherer, City Clerk.
Minnesota	St. Paul	Oct. 31, 2 p.m.	Curbing Van Buren st., check for 10 per cent.	L. W. Rundlett, City Engineer.
New Jersey	Trenton	Nov. 1, 8 p.m.	Filbertine paving Belmont Circle fr. Bellev. to Styvsn't. ave.	Harry B. Salter, City Clerk.
Ontario	Petrolia	Nov. 1	Brick paving, 6,500 sq. yds. with cement curb and gutter.	C. A. Jones, Town Engineer.
Minnesota	Hallcock	Nov. 1, 1 p.m.	Bldg. State roads Nos. 2 and 3; 37,250 yds. of earth, eight 20x24 and eight 30x24-in. concrete culverts.	C. J. Hemmingson, County Auditor.
Florida	Jacksonville	Nov. 1, 9.30 a.m.	Grading, curbing, paving 20 miles hard-surfaced County roads.	Gail L. Barnard, County Engineer.
Ohio	Toledo	Nov. 1, 10 a.m.	Macadamizing county road.	C. J. Sanzenbacher, Co. Auditor.
Delaware	Wilmington	Nov. 1, noon	Bldg. macadam road on Paper Mill road, 0.134 mile, from N'ark.	Francis A. Price, Co. Hwy. Comr.
Indiana	Shelbyville	Nov. 1, 7.30 p.m.	Bldg. sidewalks, gutters, etc. several sts.; san. trunk sewers.	L. E. Webb, City Clerk.
New York	Brooklyn	Nov. 2, 11 a.m.	Repaving with asphalt concrete on macadam, etc., E. 18th st.	Alfred E. Steers, Boro. President.
Ohio	Cleveland	Nov. 2, 11 a.m.	Changing grade of Broadway rd. No. 1 and No. 4.	Frank R. Lander, Co. Surveyor.
Iowa	Dubuque	Nov. 3	Bldg. macadam roadway and stone curb on 27th st., cost \$1,000.	C. H. Baumgartner, City Engineer.
North Dakota	Stanley	Nov. 5, 2 p.m.	Constructing several grades.	W. C. Gibb, County Auditor.
Pennsylvania	Turtle Creek	Nov. 7, noon	Bldg. retaining walls on Monroeville rd., Stewart st., Brown ave.	Philip Jones, Chm. Council St. Com.
Mississippi	Vicksburg	Nov. 7, noon	Widening and grading Pender Hill, bond double of bid.	J. D. Laughlin, Chancery Clerk.
New Jersey	Westfield	Nov. 7, 8.15 p.m.	Improving certain streets: 3 contracts: 4000 cu. yds. excav.; 4910 sq. yds. 6-in. and 10,200 sq. yds. 4-in. macadam, 2000 sq. yds. macadam, resurfaced, 3860 ft. concrete curb and gutter, No. 2: 3630 sq. yds. 6-in. and 4500 sq. yds. 4-in. macadam, Tarvia X binder, 7080 sq. yds. resurfaced, Tarvia X binder, 1660 lin. ft. brick gutter on concrete. No. 3: 980 lin. ft. brick gutter on concrete; 1610 ft. new curb, 1020 ft. curb reset on concrete; 635 lin. ft. culverts on 3 jobs; A. W. Vars, Town Surveyor.	Lloyd Thompson, Town Clerk.
Indiana	Vernon	Nov. 7, 11 a.m.	Constructing 2 1/2 miles pike road in Bigger Township.	T. I. Thomas, County Auditor.
Indiana	Danville	Nov. 7	Bldg. roads Center and Union tps., 13,336; 14,986 and 8,802 ft. long.	Alfred Leininger, Chm. Co. Comrs.
Indiana	Fowler	Nov. 7, 1 p.m.	Constructing four stone roads in York Township.	Lemuel Shipman, County Auditor.
Indiana	Bloomfield	Nov. 8	Constructing a macadamized road in Jefferson Township.	Peter M. Cook, County Auditor.
Minnesota	Crookston	Nov. 8	Asphalt, crec. block, or other material, 22,000 sq. yds., also 5,000 lin. ft. curbing, 6 sts.; old bids rejected; J. E. Carroll, City Engineer.	A. M. Childs, City Clerk.
Indiana	Rensselaer	Nov. 9, noon	Constructing five stone roads in Keener Township.	James N. Leatherman, Co. Auditor.
Indiana	Wabash	Nov. 9, 10 a.m.	Grading and paving with gravel 1.5 miles road in Lagro Twp.	J. P. Nofziger, County Auditor.
Rhode Island	Providence	Nov. 9, noon	Bldg. State rds. in E. Prov., Exeter & W. Greenwich, 1 mi. each.	John H. Edwards, Chm., S. B. P. Rd.
Florida	Fernandina	Nov. 10	Brick paving, Center st., from 5th to 11th sts.	G. L. Baltzell, City Clerk.
Indiana	Rushville	Nov. 10	Constructing 3 macadam and 2 gravel roads.	Board of County Commissioners.
New Jersey	Newark	Nov. 10, 10 a.m.	Grading and paving with Telford 2 roads, 8,846 and 6,133 ft. long; coating with macadam, 13,344 ft. Green Brook road.	Wallace Ougheltree, Dir. Freeholders.
Indiana	Lafayette	Nov. 11, 10 a.m.	Building free gravel road, Tippecanoe County.	J. P. Foresman, County Auditor.
West Virginia	Huntington	Nov. 14, 1 p.m.	Paving with vit. brick, three alleys.	John Coon, Street Commissioner.
Pennsylvania	Washington	Nov. 14, noon	Furn. vit. paving brick and block for 2 roads, 14,400 and 1,250 sq. yds., labor and for macadamiz. two 1-mile roads.	John H. Moffitt, County Controller.
Indiana	Logansport	Nov. 15	Bldg. James Harvey road, 1.5 mi. long, bet. Cass & White Cos.	R. J. Boudreaux, City Clerk.
Louisiana	Crowley	Nov. 23	Bldg. 33,000 sq. ft. concrete street crossings.	
SEWERAGE				
New York	Westfield	Oct. 28, 8 p.m.	Furnishing about 47,458 lin. ft. 8 to 24 in. pipe sewers, 143 man-holes, 23 flush tanks, one disposal plant.	J. A. Riley, Village Clerk.
Minnesota	Albert Lea	Oct. 28, 5 p.m.	Constructing 6 to 15-in. sewers and appurtenances.	C. J. Dudley, City Clerk.
Ohio	Newark	Oct. 28	Furnishing 131.6 tons class C c. i. water pipe, 2.75 tons specials two 16-in. gate valves; laying 1,092 ft. 16-in.; 1,500 ft. 10-in.; 444 ft. 8-in.; 17,796 ft. 6-in. pipe; setting three 16-in. forty-eight 6-in. valves; 28 hydrants, two 10-in. valves; 90 3/4 in. meters.	C. H. Wells, City Engineer.
Minnesota	Duluth	Oct. 28, 10 a.m.	Constructing sewers in Seventh st. and Seventh alley.	O. G. Olsen, Pres. Bd. Pub. Wks.
Minnesota	Brainerd	Oct. 29, 8 p.m.	Constructing new sewers in Sewer Districts Nos. 4 and 5.	V. N. Roderick, City Clerk.
Minnesota	St. Cloud	Oct. 31	Bldg. addition to sewer outlet on Fourth street.	E. C. Scott, City Clerk.
New Mexico	Bayard	Oct. 31, 11 a.m.	Bldg. extension of sewer mains and relocation of water mains: 1,750 ft. 6-in. vit. sewer pipe, 5 manholes, 190 lin. ft. 3-in. c. i. sewer pipe, etc.	Capt. J. R. McAndrews, O.M., U.S.A.
Pennsylvania	Arnold	Oct. 31, 8 p.m.	Bldg. 36-in. rein. concrete sewer in 14th st., from riv. to P.R.R.	P. J. Jacobus, Chm. St. Com.
Wisconsin	Oshkosh	Nov. 1, 2 p.m.	Constructing a sewer in Nebraska st.	Board of Public Works.
Georgia	Atlanta	Nov. 1, noon	Building Prostor Creek sewage disposal plant near city, \$5000 check.	R. M. Clayton, City Engineer.
Georgia	Eastman	Nov. 1	Bldg. 9 miles 8 to 12-in. t. c. pipe sewers, mh., flush tanks, etc.	J. D. Herrman, City Clerk.
Missouri	Neosho	Nov. 1, 8 p.m.	Building sewer system in District No. 1.	John M. Sherwood, City Engineer.
Indiana	Shelbyville	Nov. 1, 7.30 p.m.	Bldg. sanitary trunk sewer system, sidewalks, gutters, etc.	L. E. Webb, City Clerk.
Ohio	Bellefontaine	Nov. 1, noon	Bldg. Sections 1 and 2, sanitary sewer system; cost, \$91,000.	Clair A. Inskip, City Engineer.
Ohio	Cincinnati	Nov. 1	Bldg. lateral sewers and drains in Kuhlman ave. & Wise alley.	John J. Wenner, Clk. D. P. Serv.
Maryland	Baltimore	Nov. 2	Bldg. lateral sewers in Dist. 34A, Sanitary Contract No. 57.	J. Sewell Thomas, City Register.
California	Oakland	Nov. 2, 11 a.m.	Bldg. sewer in 14th ave. and Bruce sts. from E. 24th to 38th sts.	James W. Nelson, Sec'y. B. P. Wks.
Minnesota	Canby	Nov. 3, 8 p.m.	Elec. equipment for operating sewage pump, including 15 kw. a. c. generator, switchboard, 7.5 h. p. motor, wire, etc.	John S. Dodds, City Engineer.
Pennsylvania	Sewickley	Nov. 4, 4 p.m.	Bldg. 516 ft. 8-in., 110 ft. 6-in. vit. pipe, 15 8x6 Ys, etc.	Minott M. Baker, Acting Engineer.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
SEWERAGE (Continued)				
South Dakota	Mitchell	Nov. 7, 8 p.m.	Bldg. lateral sewers, 8 branches, 9,929 ft. 8-in. and 366 ft. 12-in. vit. pipe, 25 manholes, material and labor.	L. L. Ness, City Auditor.
California	Roseville	Nov. 7	Constructing complete sewer system; septic tank, contact beds, 42,275 ft., 6-in.; 2,640 ft., 8-in.; 13,151 ft., 10-in.; 7,984 ft., 12-in. vit. pipe.	J. H. Stineman, City Clerk. Lewis Hall, Village Clerk.
Ohio	Carthage	Nov. 8, noon	Bldg. sanitary sewer system, complete.	E. D. Rightmire, City Engineer.
New Jersey	Atlantic City	Nov. 14, 8 p.m.	Bldg. storm water drainage system; rein. conc. and brick; 10,400 ft. long; also 10,390 ft. lateral drains.	Lt. R. O. Edwards, Constr. Q. M.
North Carolina	Ft. Caswell	Nov. 18	Constructing sewers and cisterns at post.	
WATER SUPPLY				
Wisconsin	Superior	Oct. 28, 1 p.m.	Laying water and gas service pipes in Grand and Cummings aves.	P. J. Ekstrand, Chm. Bd. Pub. Wks.
Nebraska	Spalding	Oct. 28	Bldg. \$7,000 water works and electric light plant; Martz Bros., Seward, Engrs.	Village Clerk.
New Jersey	Hohokus	Oct. 28, 8 p.m.	Bldg. water supply system: 325 tons or 15,000 ft., 4 to 10-in. high-pressure c. i. main, specials, hydrants, valves, etc., 3 bids.	Ross Mersereau, Mayor. B. J. Mullaney, Comr. Pub. Wks.
Illinois	Chicago	Oct. 28	Piping, feed-water heater and meter, etc., 68th st. Pump, Sta.	E. W. Romkey, Chm. Bd. Co. Sup.
Iowa	Burlington	Oct. 28, 2 p.m.	Furnishing and erecting complete pumping plant, inc. foundations and building for County Drainage Dist. No. 1, extension.	C. C. Davis, Chm. Water Com. Board of Public Works.
Illinois	Centralia	Oct. 28, 8 p.m.	Cleaning 10,375 ft. 12-in.; 1,000 ft. 10-in.; 7,500 ft. 8-in.; 3,000 ft. 6-in. c. i. water main, located under ground.	P. W. Guiney, Constr. Q. M. J. R. McAndrews, Constructing Q. M.
Wisconsin	Superior	Oct. 28, 1 p.m.	Laying water service pipes in Grand and Cummings aves.	John D. Davidson, Sec'y. Water Bd.
Texas	Ft. Sam Houston	Oct. 29, 11 a.m.	Bldg. 300,000-gal. steel tank and trestle and main extensions.	H. L. Swatts, City Clerk.
New Mexico	Bayard	Oct. 31, 11 a.m.	Relocating 580 lin. ft. 4 and 6-in. water mains; ext. sewer mains.	X. A. Kramer, C.E., Magnolia.
New York	Binghamton	Nov. 1, 10 a.m.	Bldg. 5,000,000-gal. distributing reservoir, inclu. 2,900 cu. yds. concrete, plain and rein.; 30,000 cu. yds. excav.; \$20,000 bond.	H. M. Talbott, City Engineer.
Florida	Lakeland	Nov. 1	Improvements to water and light plant, estimated cost, \$40,000.	James A. Wellons, Mayor.
Mississippi	Osyka	Nov. 1	Building \$20,000 water works and electric light plant.	L. Van Gilder, Engr. & Supt. W. W.
Kentucky	Owensboro	Nov. 1	Constructing water-softening plant at city water works.	L. O. A. Stockhill, Village Recorder.
North Carolina	Smithfield	Nov. 1	Constructing water works and electric lighting plant for city.	H. S. Thompson, Comr. W. S. G. & E.
New Jersey	Atlantic City	Nov. 1, 2:30 p.m.	Furn. hori., single-cylinder, non-cond. Corliss or Lentz v. engine.	T. B. Allen, Chm. Water Wks. Com.
Minnesota	Triumph	Nov. 1, 8 p.m.	Constructing a 4-in. tubular well.	F. F. Forbes, Supt. Water Works.
New York	Brooklyn	Nov. 2, 2 p.m.	Furn. and laying water mains, etc., in Borough Park, Lefferts Park, Mapleton and C. I. Dists.; also furn. c. i. pipe, spec. etc.	F. G. Ward, Comr. Pub. Wks.
Illinois	McLeansboro	Nov. 3	Bldg. reservoir and filter, exten. water mains; cost, \$14,542.	L. W. Lemon, City Engineer.
Massachusetts	Brookline	Nov. 3, 3 p.m.	Furnishing and installing vertical triple expansion pumping engine, cap. 2,500,000 gals. in 24 hours, for high service station, also triplex pump, same capacity, driven by gas engine.	W. F. Sams, City Clerk.
New York	Buffalo	Nov. 4, 11 a.m.	Three steam turbine elec. generators for Pump, Sta., Porter ave.	Manford Horn, City Recorder.
Illinois	Clinton	Nov. 5	Install pumping plant, either steam or electric motive power; cap. at least 1,000,000 gals. per day; firms to submit both plans and proposals.	H. L. Swatts, Sec'y. B. Bd. Trus
Kansas	Chanute	Nov. 7, 5 p.m.	Furn. & lay. 9 mi. 4 to 16-in. water mains, install. three 3 hp. boilers.	
Minnesota	Appleton	Nov. 7, 8 p.m.	Furnishing complete pumping plant for 10-in. well, 185 ft. deep.	
Florida	Lakeland	Nov. 10, noon	Furn. 3 mi. 10, 6 and 4-in. c. i. pipe, fittings, hydrants, valves and boxes; compound engine, air compressor, generator, exciter, and switchboard; laying pipe lines, setting hydrants, valves and boxes; bldg. power house, machinery foundations, reservoir and installing machinery, Wm. W. Lyon, C. E., Duval Bldg., Jacksonville.	
BRIDGES				
Missouri	Springfield	Oct. 28, 8 p.m.	Bldg. 30-ft. arch concrete bridge over Jordan Creek, Boonville st.	H. G. Horton, City Engineer.
New Jersey	Layton	Oct. 28, 2:30 p.m.	Bldg. iron bridge, 41x19 ft., rein. concrete floor, guards, etc.	J. J. Van Sickle, Chm. Freeholders.
Ohio	Columbus	Oct. 28, 11 a.m.	Bldg. culvert under M. & E canal at Crawford's Run, Hamilton.	James R. Marker, Ch. Engr. State P.
Illinois	Homer	Oct. 29	Bldg. 4 rein. concrete bridges, 8, 10 and two 12-ft. spans, each with 14-ft. driveways two 4-ft. and two 6-ft. wings, 6 to 8 ft. high, filling and grading approaches; also remov. old bridges.	W. H. Zarley, County Surv., Joliet.
Indiana	Rushville	Oct. 29, 2 p.m.	Erecting three concrete bridges.	Jesse M. Stone, County Auditor.
Texas	Stilson	Oct. 29, noon	Bldg. 48-ft. span wooden truss hwy. br. over main outlet ditch.	C. A. Brown, Sec'y. Drainage Dist.
Indiana	South Bend	Oct. 31, 11 a.m.	Repair two culverts in Greene and one in Penn Township.	John W. Harbou, County Auditor.
Ohio	Loveland	Oct. 31, noon	Erecting concrete bridge on Jackson st. in village.	J. L. Larkin, Co. Aud., Batavia.
Ohio	Youngstown	Oct. 31, 11 a.m.	Bldg. abutment and pedestals for bridges over Power Run Youngstown, twp.; also for bldg. stone arch over Dry Run, Gladstone st., city.	Will B. Jones, County Auditor.
California	Ukiah	Oct. 31	Constructing bridge across Russian Gulch.	Board of Supervisors.
Ohio	Zanesville	Oct. 31, noon	Erecting a bridge across Duncan's run.	L. E. Brelsford, County Auditor.
Minnesota	Red Lake	Oct. 31, noon	Bldg. steel bridge over Clearwater river.	Wm. H. Bishop, Supt. Ind. Serv.
Indiana	Indianapolis	Nov. 1, 10 a.m.	Bldg. four culverts and one retaining wall.	Albert Sahn, County Auditor.
Louisiana	Tallulah	Nov. 2	Bldg. 2 bridges 116 and 168 ft. long, 14 ft. roadway, with plans.	A. L. Slack, Sec'y., Police Jury.
Ohio	Cleveland	Nov. 2, 11 a.m.	Bldg. steel ties for Denison-Harvard viaduct, Newburg twp.	John F. Goldenbogen, Clk., Co. Com.
West Virginia	Wheeling	Nov. 2, 2 p.m.	Erecting a bridge over Glens Run; A. S. Bell, County Engr.	Fred H. Frank, Clk. County Comrs.
North Carolina	Columbus	Nov. 7	Bldg. low bridge over Green river at Womack bridge.	F. M. Burgess, Clk., County Comrs.
Colorado	Pueblo	Nov. 7, 4 p.m.	Remov. bridge and bldg. steel bridge over Ark. riv., at Union riv.	D. P. Gaymon, City Engineer.
Oklahoma	Oklahoma City	Nov. 7, 10 a.m.	Bldg. rein. arched concrete bridge.	G. W. Carrico, Chm. County Comrs.
Indiana	Greenfield	Nov. 7, 10 a.m.	Constructing three County bridges.	Bd. Comrs. of Hancock County.
Indiana	Indianapolis	Nov. 11, 10 a.m.	Erecting bridge over Fall Creek in Washington Township.	Albert Sahn, County Auditor.
Ohio	Cincinnati	Nov. 11, noon	Bldg. concrete bridge on Fallis road, Symmes township.	Stanley Struble, Pres. Co. Comrs.
Pennsylvania	Washington	Nov. 14, noon	Bldg. culverts, small bridges, etc., on four County roads.	Chaney & Armstrong, County Engr.
LIGHTING AND POWER				
Nebraska	Spalding	Oct. 28	Bldg. \$7,000 elec. lt. and water plant, Martz Bros., Seward, Engr.	Village Clerk.
Florida	Lakeland	Nov. 1	Improvements to light and water plant; cost \$40,000.	H. L. Swatts, City Clerk.
Mississippi	Osyka	Nov. 1	Building \$20,000 electric light plant and water works.	X. A. Kramer, C.E., Magnolia.
North Carolina	Smithfield	Nov. 1	Constructing an electric lighting plant and water works.	James A. Wellons, Mayor.
New York	New York	Nov. 1	Furn. and install electric light systems in several bldgs.	Wm. H. Edwards, Comr. St. Clean'g.
New York	New York	Nov. 3	Inst. electric lighting fixtures in Metropolitan Museum of Art.	Chas. B. Stover, Pres., Park Board.
Washington	Montesano	Nov. 7	Furn. and install electric fix. and incan. lamps in new Court H.	F. Rosmond, County Auditor.
Florida	Lakeland	Nov. 10	Improving electric light and water works plant; cost \$40,000 for detail; see item under "Water Supply."	C. W. Deen, Chm. Bd. Pub. Works.
Maryland	Annapolis	Nov. 12, 11 a.m.	Completing power plant at U. S. Naval Academy.	Sec'y. Navy Dept., Washington, D.C.
California	Bridgeport	Nov. 14	Franchise 30 years for transmission line.	Geo. deLury, Co. Clerk.
Montana	Missoula	Nov. 20	Constr. \$445,000 power plant on Rock Creek at Stevensville.	E. S. Dorman, Ch. Engr., Rock Creek Power Company.
MISCELLANEOUS				
Indiana	New Albany	Oct. 28	Removal of garbage.	Board Public Works.
Minnesota	Duluth	Oct. 28, 3 p.m.	Furnishing city a gasoline fire engine, 500 gals. per min. cap., weight, 4500 lbs., cost about \$3,000, cert. check, 10 per cent.	J. H. McCall, Sec'y., Fire Comrs.
California	Santa Ana	Oct. 29	Whole contract for bldg. channel, Newport Protection District.	Newport Protection District.
Indiana	Frankfort	Oct. 29, 10 a.m.	Rock-facing the County jail.	C. F. Cromwell, County Auditor.
West Virginia	Wheeling	Oct. 29, 11 a.m.	Furn. 8,000 bbls. Portland cement for Dam No. 26, Ohio river.	Capt. F. W. Altstaetter, U. S. Engrs.
California	Porterville	Oct. 31	Furn. motor-driven chem. fire engine, also motor hose cart.	M. M. Dale, Clk. City Trustees.
Minnesota	Duluth	Oct. 31, noon	Building pierhead crib and riprap embankment at Ashland, Wis.	Graham D. Fitch, Col. U. S. Engrs.
Iowa	Lorimor	Oct. 31, 8 p.m.	Building town hall.	H. K. Albert, Town Clerk.
Kansas	Kansas City	Nov. 1	Bldg. City Hall; W. W. Rose, K. C., Mo., architect.	J. E. Smythe, City Clerk.
Virginia	Richmond	Nov. 1, 4 p.m.	Bldg. rein. concrete bulkhead wharf on James river, \$500 check.	Charles E. Bolling, City Engineer.
New Jersey	Elizabeth	Nov. 1, 8:30 p.m.	Bldg. 2-story steel shed on city dock on Staten Island Sound.	Chas. H. Moore, Chm. Com. on Dks.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
MISCELLANEOUS (Continued)				
Louisiana.....	Shreveport.....	Nov. 1.....	Bldg. levee work in Caddo Parish, on right bank of Red River: Upper Ruch Point levee, 35,000 cu. yds., Beard, 12,000; Robson, 30,000.	Bd. Comrs. of Caddo Levee Dist.
Ontario.....	London.....	Nov. 2.....	Furn. motor fire engine, 700 to 1000-gals. capacity, complete.	H. Ashplant, Chm. Fire Committee.
Louisiana.....	New Orleans.....	Nov. 5, 11 a.m.	Furnishing 13,000 tons of rock for New Orleans harbor.	Capt. R. R. Ralston, U.S. Engr. Cps
New York.....	Albany.....	Nov. 7, 3 p.m.	Bldg. police station on N. Pearl st., W. H. Van Guysling, Archt.	I. Wachsmann, Sec'y. Bd. C. & Sup.
Alberta.....	Calgary.....	Nov. 7, noon.	Furn. ties and poles for extension of municipal street railway.	W. D. Spence, City Clerk.
Ontario.....	Ottawa.....	Nov. 7, 4 p.m.	Bldg. extension to wharf at Providence Bay, Algoma, Ont.	R. C. Des Rochers, Sec'y. D.P. Wks.
South Dakota.....	Mitchell.....	Nov. 7, 8 p.m.	Furnishing 500 ft. standard 3-in. fire hose.	L. L. Ness, City Auditor.
New Jersey.....	Highland Park.....	Nov. 10 8 p.m.	Furnishing 300 ft. 2½-in fire hose in 50-ft. lengths.	James R. Earle, Clk., Boro. Council.
Ohio.....	E. Youngstown.....	Nov. 12, noon.	Erect brick, stone and frame city build.; R. F. Thompson, arch.	D. C. Hamilton, Mayor of Village.
Wisconsin.....	Milwaukee.....	Nov. 14.....	Bldg. \$95,000 central fire station at Broadway & Martin Sts.	C. D. Thompson, City Clerk.
California.....	San Francisco.....	Nov. 16.....	Construct. two incinerating plants, 120 tons each, cost \$250,000	Board of Public Works.

STREET IMPROVEMENTS

Birmingham, Ala.—Council has passed ordinances as follows: Paving with bitulithic at cost of \$30,500; with granitoid, \$26,600; bitulithic and brick, \$32,500; also grading, curbing, guttering and sidewalking 23d st., \$8,000.

Birmingham, Ala.—Board of Revenue will at once start work on proposed Central ave. road in Shades Valley.

Mobile, Ala.—Mobile County will vote Nov. 8 on \$500,000 bonds to build roads.—J. T. Bauer, President Board of Revenue.

Little Rock, Ark.—Council has adopted ordinance appropriating \$13,500 for paving intersections of all streets crossing West 23d st. from Main to Wolfe st. in Improvement District No. 157; also \$21,000 for paving streets and constructing storm sewers in Improvement District No. 145.—George A. Stratman, Mayor.

Los Angeles, Cal.—Good roads bonds to extent of \$525,000 have been sold by Board of Supervisors to Harris Trust and Savings Bank.

Oakland, Cal.—Southern Pacific company has come to terms with Seventh Street Improvement Club and has agreed to asphalt entire length of Seventh st. and put in granite curbs on both sides of street, from Fallon st. to bay, providing it receives franchise for fifty years.

Tropico, Cal.—Residents along Central ave. between Parke ave. and Tenth st. are planning many improvements for their streets.

Pomona, Cal.—Grading and oiling of Sixth st. is being considered.

Colorado Springs, Col.—County Commissioners Hutchinson and Madden are conferring with State Highway Commission with regard to getting appropriation to be used in improving State road from Manitou up Ute pass to west boundary of El Paso County.

Miami, Fla.—Council will expend \$100,000 for improvements, including paving.

Palatka, Fla.—City will pave several of principal lateral streets in business section with vit. brick; granite curbing or concrete curb and gutter.

Rome, Ga.—Citizens will vote Dec. 6, postponed from Nov. 8, on \$50,000 bonds for paving and other street improvements.

Thomasville, Ga.—Paving of principal streets is being considered.

Wallace, Ida.—Marble Creek and Mica Creek settlers have already planned extensive network of roads between St. Joe, Marble Creek and Mica Creek.

Elkhart, Ind.—Extension of Benham ave. is being urged.

Kendallville, Ind.—Council is considering paving of North Main st.

Redkey, Ind.—Board of Trustees has made provision to widen West Main st.

Carroll, Ia.—Paving of business streets with brick and concrete is being considered.

Coffeyville, Kan.—Montgomery County Good Roads Association adopted definite plans for building of an oiled dirt road between this city and Independence; distance about twenty miles.

Leavenworth, Kan.—City Commissioners are considering paving of portions of three streets with brick.

Wichita, Kan.—Sedgwick County is considering 15 miles of good roads.—C. A. Messer, County Engineer.

Lexington, Ky.—Bids will be readvertised for construction of Ashland, Clay, Bryant and other streets.

Louisville, Ky.—Board of Trade will consider proposition of making 3d ave. a boulevard.

Elkton, Md.—Cecil County Commissioners have decided to issue \$10,000 bonds for road improvements.

Detroit, Mich.—Citizens will vote on \$2,000,000 bond issue for good roads.

Lake Linden, Mich.—Village Council is considering improvement of streets.

Traverse City, Mich.—Supervisors have appropriated \$14,700 to be used in improv-

ing Grand Traverse County roads the coming year.

Brainerd, Minn.—Council has ordered much grading and curbing on streets in various parts of city; North Broadway is to be boulevard.

Rochester, Minn.—Bids have been rejected for paving 4th, 5th and Zumbro sts.

Carthage, Mo.—Improvement of Grand ave. is being considered.

St. Louis, Mo.—City is considering improvements, including construction of sidewalks along various streets in extreme west end.—James C. Travia, Street Commissioner.

Helena, Mont.—Committee of Streets and Alleys will receive bids soon for improvement of Railroad ave. and for laying a Portland cement sidewalk on the south side of Helena ave.—Charles W. Hellmuck, City Engineer.

North Bergen, N. J.—Township Committee will improve Tonnele ave.

Ocean City, N. J.—Citizens will vote on bonds for improvement of streets.

Paterson, N. J.—Board of Public Works has decided to widen Park ave.

Plainfield, N. J.—Council has awarded \$30,000 street improvement bonds to City National Bank.

Trenton, N. J.—Council is considering paving of Hoffman and Prospect sts. with Filbertine.

Ventnor, N. J.—Citizens will vote Nov. 1 on proposition to expend \$50,000 in widening Ventnor ave.

Westfield, N. J.—Council is considering improvement of Westfield ave.

Albany, N. Y.—Mayor McEwan has signed ordinances authorizing improvement of three streets and grading of Delaware ave.

Albany, N. Y.—Council has passed ordinance for improving West Lawrence st.

Hornell, N. Y.—All bids have been rejected by Board of Public Works for resurfacing Elm st.

Mount Vernon, N. Y.—Paving of Lincoln ave. with asphalt is being considered.

Newburgh, N. Y.—Council will consider paving of Grand st.

Niagara Falls, N. Y.—Council will consider paving of 22d st.

Akron, O.—Council has passed resolutions for paving High st. and Rhodes ave.

Cincinnati, O.—County Commissioners have approved plans, specifications and estimates, \$16,770, for placing culverts and other works in Kirby road to stop sliding and slipping; estimate of \$6,800 for improvement of Carthage ave., from Norwood to Reading road, was also approved.

Cincinnati, O.—Plans will be prepared for improvement of Banning road, from Mount Airy to Blue Rock pike; estimated cost, \$12,628.60.

Eaton, O.—County Commissioners have decided to improve Eaton and Sugar Valley turnpike after plans by State Highway Commission; cost \$12,000.

Sandusky, O.—Erie County Commissioners have decided to rebuild stretches of four roads.

Zanesville, O.—Council has passed ordinance for grading, paving and curbing Locust ave.—A. H. Gorrell, Mayor.

Tulsa, Okla.—Plans have been prepared by City Engineer T. C. Hughes for 7 to 10 miles of cement sidewalks; cost \$20,000 to \$25,000.

Philadelphia, Pa.—Council is considering paving of Girard ave., from Lancaster ave. to the bridge over the Pennsylvania R. R. tracks at Belmont ave.; Girard ave., from Parkside ave. to the west end of the Girard ave. bridge over the Schuylkill River and 52d st., from Warren st. to Parkside ave., all in West Philadelphia.

Pittsburg, Pa.—Council has authorized grading, paving and curbing of streets in grounds of University of Pittsburg.

Rock Hill, S. C.—County Commissioners have approved plan for building two miles of road.

Chattanooga, Tenn.—Council has passed over veto by Mayor Thompson, ordinance

providing \$10,000 appropriation for widening Rossville ave. and extending Missionary ave.

Anson, Tex.—Jones County will vote on \$125,000 bonds for road improvements.

Brownwood, Tex.—Precinct No. 1 will vote Nov. 14 on \$50,000 additional bonds to complete building of roads.

Cisco, Tex.—Election on bonds for good roads is being considered.

El Paso, Tex.—Paving of highway to Washington Park and fair grounds is being planned.

Fort Worth, Tex.—Street Commissioner Maddox will supplement 1911 budget with estimated expense for street oiling.

Haskell, Tex.—County will vote Nov. 8 on \$100,000 road bonds.

Houston, Tex.—Paving of Baker st. in Fifth Ward is being urged.

Nacogdoches, Tex.—Citizens have defeated proposition to construct sidewalks.

San Angelo, Tex.—Citizens have voted \$20,000 bonds for paving portion of Chadbourne st.—J. J. Goodfellow, City Engineer.

Front Royal, Va.—Warren County will vote Nov. 8 on \$30,000 bonds for construction of road in Front Royal district.

Jonesville, Va.—Lee County will vote Nov. 29 on \$350,000 bonds for road construction.

Portsmouth, Va.—Central Improvement Association is urging paving of County st.

Puyallup, Wash.—Council will call for bids for paving Poplar st. with asphalt or granitoid.

Seattle, Wash.—Plans and specifications have been approved for paving Main st. and 4th ave. South; also grading and concrete walks on Washington st. and 31st ave. South.

Tacoma, Wash.—Council has decided to improve portions of streets in four districts.

Wenatchee, Wash.—South Wenatchee has created improvement district and will build 13 miles of road, 16 ft. in width, to cost between \$22,000 and \$25,000.

Milwaukee, Wis.—At suggestion of Supt. Mullen of the street construction department, steps may be taken next year to build municipal asphalt plant so that the city can compete with contractors in laying asphalt paving; cost \$5,000.

Racine, Wis.—Extension of eight streets is being considered.

Ottawa, Ont., Can.—City Engineer Ker has estimated cost of constructing sidewalks around old Sandy Hill Cemetery at \$3,285.

Toronto, Ont., Can.—Construction of brick and asphalt pavements has been recommended by City Engineer Rust to cost about \$60,000.

CONTRACTS AWARDED

Birmingham, Ala.—To F. W. Jordan Construction Co., brick paving and sidewalks, \$54,850.

Pomona, Cal.—Furnishing 20,000 gals. of oil for streets to Associated Oil Co., \$1 per bbl.

Hartford, Conn.—State road work: Town of East Granby, First Section, 3,270 lin. ft. gravel-telford road on the Westfield turnpike, including four 15-in. and one 12-in. tile culverts, to Board of Selectmen of town, W. W. Viets, Chairman, \$1 per lin. ft. for gravel, \$1.60 for telford, 95c. for rubble drain; the only other bidder was William Maloney, West Hartford, \$1 for macadam, \$1.75 for telford, \$1 for rubble drain; Second Section, 2,700 lin. ft. gravel-telford road, including one 12-in. and one 30-in. tile culverts, on Tariffville road, to the Board of Selectmen, \$1.25 per lin. ft. for gravel, \$1.70 for telford, 90c. for rubble drain; William Maloney, West Hartford, submitted these figures: \$1.81 for gravel, \$2.51 for telford, \$1 for rubble drain. Town of Mansfield, 6,475 lin. ft. gravel-telford road, including ten 12-in., ten 15-in. and one 24-in. tile culverts, to Tony Leo, Thompson, \$1.09 per lin. ft. for gravel, \$1.76 for telford, 98c. per lin. ft. for rubble drain; other bidders: A. D. Bridge's Sons Co., Inc., Hazardville, \$1.77,

\$2.37, \$1; A. Brazos & Sons, Middletown, \$2.22, \$2.65, 80c.; Ahern Bros., Norwich, \$1.55, \$2.15, 95c.; A. Vito, Thompson, \$1.39, \$2.19, \$1.10. Town of Redding, 5,575 lin. ft. graded telford road, including one 10-in., three 18-in., one 12-in. and one 15-in. tile culverts, to H. Sanford Osborn and Herbert S. Barnes, Redding, \$4,000 for the entire grading, with \$1 per lin. ft. extra for telford, 90c. per lin. ft. for rubble drain; Warner & Sanford, Redding, the only other bidder, \$4,125, \$1.47½, 70c. Town of Stamford, 2,305 lin. ft. macadam-telford road, including one 12-in. tile culvert, to L. F. Merritt, Stamford, \$2.10 per lin. ft. for macadam, \$3 for telford, \$1 per lin. ft. for rubble drain; B. D. Pierce, Jr., Co., Bridgeport, only other bidder, \$2.83, \$3.58, 80c. Town of Newington, 3,737.7 lin. ft. macadam-telford road on the Hartford and New Haven turnpike, including one 15-in. tile culvert and one reinforced concrete arch culvert, to Thomas Kearney, Meriden, \$1.62 per lin. ft. for macadam, \$2.40 for telford, 85c. per lin. ft. for rubble drain; other bidders: William Maloney, West Hartford, \$1.76, \$2.36, \$1; Sternberg & Cadwell, West Hartford, \$1.97, \$2.50, \$1; Roger Kennedy, Middletown, \$1.83, \$2.45, \$1. Town of Weston, 2,600 lin. ft. gravel-telford road on the Weston and Newtown turnpike, including six 15-in. and one 30-in. tile culverts, to L. F. Merritt, Stamford, \$2.25 per lin. ft. for gravel, \$3.10 for telford, \$1.25 per lin. ft. for rubble drain, and \$6.50 per cu. yd. for masonry walls. Town of Voluntown, 2,610 lin. ft. gravel-telford road in Beach Pond section, to Eldredge Construction Co., Mystic, \$3.915 for entire gravel work; other bidders were: A. D. Bridge's Sons Co., Inc., Hazardville, \$2.59 per lin. ft. for gravel, \$3.29 for telford; Ahern Bros., Norwich, \$2.75 and \$3.40; Edward McKnight, Westerly, R. I., \$2.25 and \$2.75; Second Section, 1,938 lin. ft. macadam-telford road on Main st., including one 12-in. tile culvert, to the Eldredge Construction Co., \$3.876 for the entire macadam work; other bidders: A. D. Bridge's Sons Co., Inc., Hazardville, \$2.91 per lin. ft. for macadam, \$3.51 for telford; Edward McKnight, Westerly, R. I., \$2.10 and \$1.95.

New Haven, Conn.—Repairing portions of Humphrey st., to Thos. F. Maher, \$1,590.

Normal, Ill.—Laying concrete walks, to E. J. Metcalf, 9.09c. per sq. ft.

Peoria, Ill.—Paving Adams st., to Brewster & Evans, \$34,491.50.

Streator, Ill.—Paving South Vermillion st., to Geo. Swartz, \$6,500.

Bloomfield, Ind.—Construction of gravel roads as follows: Elliott road in Washington Township, to Frank Musselman, Newberry, \$4,605; Clayton road in Stockton Township, to Fred Carpenter and R. M. Stafford, Lyons, \$4,600, and the Davhoff road in Jefferson Township, to Samuel Hayes, Worthington, \$5,298.

Logansport, Ind.—Building Merriman road, to Bell & Bell, \$4,979.

Vincennes, Ind.—Improvement of Broadway from 14th to city ditch, to Edward Pennington, concrete walks, 8c. per sq. ft.; stone curbing, 36c. per lin. ft.

Clinton, Ia.—Paving 3d ave., to Thos. Carey & Son, \$5,725.75.

Fort Scott, Kan.—Paving Market Square, to Midland Construction Co., 1,600 sq. yds., \$1 per yd.; Main st., to same, 10,824 yds.; total, \$15,484.84.

Wichita, Kan.—Paving two miles of East 2d st., to Rackliffe & Gibson, representing the Hassam pavement, \$85,000; West Douglas ave. from Exposition to Millwood ave., to Cleveland-Trinidad Paving Co., \$2.50 per yd.; right-of-way of street car tracks on Central ave., to W. G. McKee, \$2.49 per yd.; Wiley ave. from Park to Riverside ave., to Stuckey Construction Co., \$1.99 per yd.; Maple st., Hillside to Circle Drive, to Nolan & Draper, \$2; 2d st. from Emporia to Rock Island ave., to Nolan & Draper, \$1.97; Erie st. from Douglas ave. to Cedar st., to Stuckey Construction Co., \$1.99.

Lexington, Ky.—Resurfacing Winchester Pike to Home Construction Co.; distance 4 miles.

Baltimore, Md.—Paving Cokesburg ave. with vit. brick, to Wm. M. Elder, \$8,815.55.

Cumberland, Md.—Repaving South Center st. and parts of Union and Harrison sts., to Frederick Perry, \$9,351.26.

Rochester, Minn.—Eight blocks on Broadway, to the Kettle River Co., Minneapolis; curbing and paving, \$62,353.59.

Tarkio, Mo.—Paving Main st., to Wellman & Olson, St. Joseph, \$25,000.

Omaha, Neb.—Grading Southeast blvd. near Riverview Park and the Northwest blvd. near Fontenelle Park, to the Krantz-Turner Co., \$10,000; contract awarded some time ago, but has been held in abeyance because bonds have been held up on account of technical defect.

Trenton, N. J.—Laying granolithic pavement around new city hall, to J. G. Doak & Co., Philadelphia, \$4,900.

Trenton, N. J.—Paving State st. to Fil-

bert Paving Co.; Water st. with vit. brick to Antonio De Lucia.

Westfield, N. J.—Laying concrete walks on Prospect st. to Contractor Federmann, 11c.

Hornell, N. Y.—To Gray & Miller for construction of wall and sidewalk in front of St. James Mercy Hospital, on Canisteo st., also for curbing and guttering of Hakes ave.

Lockport, N. Y.—Cement walks on Ohio st., to C. N. Stainthorpe & Co., \$1,590.

New York, N. Y.—Maintaining asphalt pavements, to the Vulcanite Paving Co., 30 Church st., New York City, \$24,535; to Wm. J. Fitzgerald, 547 W. 45th st., for 10 improvement street contracts, \$80,748.

Scarsdale, N. Y.—To E. L. Exbeck, White Plains, for repairing or constructing highways, \$18,000.

Syracuse, N. Y.—Sheet asphalt pavement on Landon ave., to Warner-Quinlan Asphalt Co., \$9,116.15; paving Brighton ave., to Central City Paving Co., \$6,446.25.

Yonkers, N. Y.—Grading and curbing Lincoln st., to Kearns & Hart.

Canton, O.—To H. P. Kinsey for paving Canton-New Berlin road with brick, \$20,375.

Cincinnati, O.—Macadam in Evanswood pl., to Kirchner Construction Co., \$5,667; brick pavement in Savoy pl., to M. Sullivan & Sons' Construction Co., \$4,156.70.

Toledo, O.—Improving Glendale road, to C. W. Ryan, Maumee, \$6,800.

Brownsville, Pa.—Constructing portion of State brick road, to William C. McCormick, Uniontown, \$7,080.

Chambersburg, Pa.—Concrete sidewalk at reservoir on North Franklin st., to W. E. Boyer, 14c. per sq. ft.; 30c. per cu. ft. on curb, or \$1.12½ per lin. ft.

Knoxville, Pa.—To Thomas Cronin Co., South 17th and Muriel sts., Pittsburg, for recuring and repaving of Bausman st. from Knox ave. to Brownsville road.

McKees Rocks, Pa.—Paving, to M. O'Heron & Co., for grading, curbing and paving of School, Olivia, Robb, Guthrie and Robinson sts.; Gardner and Page sts., to Frank Bryan; 10,000 ft. of cement sidewalk, 2,000 cu. yds. of grading and 500 cu. yds. filling, to W. F. Herschberger.

Oakmont, Pa.—To James Topley & Co., McKeesport, for approximately 384 cu. yds. of grading, 451 lin. ft. of curb and gutter, and 1,000 sq. yds. of paving.

Sharon, Pa.—To William McIntyre & Sons for paving Stambaugh ave., \$2.05 for paving about 2,000 ft. of street; total cost, \$4,100.

Providence, R. I.—Improvements on the North Park lands, to include macadam driveways through the park, to Alton A. Allen, \$15,392; other bidders: J. H. Sullivan, Boston, Mass., \$16,365; C. B. Hicks, \$22,502; C. N. Menard, \$20,187.

Dallas, Tex.—Paving Pearl st., to Texas Bitulithic Co., \$2.30 per sq. yd.

Richmond, Tex.—To W. D. Haden, Galveston, for complete construction of new shell road from Richmond to meet Harris County shell road below Missouri City.

Seattle, Wash.—Paving East John st., to Barber Asphalt Paving Co., \$2,723.70; grading Graham st., to Rufus Buck, \$5,803; grading alley in Block 30, to Agassiz & Hadley, \$1,184; grading Rainier ave., to A. Peterson, \$34,802.50.

Seattle, Wash.—Paving East Jefferson st., to P. J. McHugh, \$28,247.37.

Seattle, Wash.—Concrete walks in Whitman ave., to Packard, Spink Co., \$25,769; 17th ave. North, to Peabody Bros., \$9,851; brick paving on 3d ave., to Grant, Smith & Co. and Stillwell, \$81,006.

Spokane, Wash.—Grading, curbing, sidewalk and parking Garfield st., 9th to 11th ave., to Colley & Ferguson, \$5,580; estimate \$5,350; same, Napa st., 11th to 13th ave., to J. C. Kennedy, \$3,190; estimate \$2,700; Colley & Ferguson bid \$3,180; sidewalk Stevens st., 17th to 18th ave., to Massie Brothers & Long, \$360; estimate \$375; grading, parking and curbing 10th ave., Napa to Pittsburg st., to Colley & Ferguson, \$4,060; estimate \$3,900; grading, curbing, parking and sidewalk 9th ave., to J. B. Mitchell, \$1,969; estimate \$2,100.

La Crosse, Wis.—Paving 12,870 sq. yds. with brick, to La Crosse Stone Co., \$3,347; cement curb and gutter, asphalt filler—Geo. Falk, Street Commissioner.

Superior, Wis.—Improving John ave., to Peterson & Holm, \$6,544.44.

Qu'Appelle, Sask., Can.—To Western Pavers Co., Regina, for half a mile of cement walks.

BIDS RECEIVED

Dixon, Ill.—Paving, (a) 2,750 sq. yds. brick paving, broken stone foundation and sand fill, (b) 67.8 cu. yds. concrete retaining wall, (c) 454 ft. ordinary concrete curb; Chas F. Nesbit, (a) \$1.48, (b) \$7, (c) 35c.; Rink & Schnell, (a) \$1, (b) \$7, (c) 35c.—L. B. Neighbor, City Engineer.

Moline, Ill.—Excavating and grading Coal Valley Rural road, W. I. Kettlewell, Iowa City, \$11,515; McConnors & Co., Chi-

cago, section 1 \$8,934, section 2 \$5,227; Littig Bros., Davenport, section 1 \$7,762, section 2 \$7,563; W. I. Kettlewell, Iowa City, section 1 \$6,288, section 2 \$5,227; Littig Bros., Davenport, section 1 \$8,762, section 2 \$9,887; F. J. Peterson, Davenport, section 1 \$11,167, section 2 \$9,338; in first section, 34,360 cu. yds. of dirt to move, and in second, 27,465.

Deerfield, Mass.—Highway construction, Jose Morrell, North Attleboro, \$8,307; Francis J. Magus, West Newton, \$8,655; L. C. Carchia, Boston, \$8,686; F. E. Ellis, Melrose, \$9,034; G. de Pollito, Boston, \$9,164; R. F. Hudson, Melrose, \$9,494; M. L. Camarco, Lee, \$9,674; D. F. Perry, Brattleboro, Vt., \$10,235; J. B. Hayes, Greenfield, \$11,240.

New York, N. Y.—Paving in Bronx: Wilkins ave., from Intervale ave. to Southern blvd., Hastings Pavement Co., lowest bidder, 3,430 sq. yds. completed asphalt block pavement, and keep same in repair for five years from date of acceptance, \$1.73; 498 cu. yds. concrete, including mortar bed, \$5.92; 200 lin. ft. new curb, furnished and set in concrete, \$1; 850 lin. ft. old curbstone, rejoiner, recut on top and reset in concrete, 33c.; total \$9,363; Barber Asphalt Co. bid \$9,797. East 135th st., from Southern blvd. to Locust ave.: Hastings Pavement Co., lowest bidder, 6,735 sq. yds. completed asphalt block pavement and keep same in repair for five years, \$1.63; 1,080 cu. yds. concrete, including mortar bed, \$5.92; 800 lin. ft. new curb, 98c.; 3,100 lin. ft. old curb, reset in concrete, 33c.; total, \$19,179; Barber Asphalt Co., \$21,161; the Hastings Pavement Co., lowest bidder on paving East 172d st. with asphalt block on concrete foundation, \$7,002. Walton ave., from Fordham road to Burnside ave., Uvalde Asphalt Paving Co., lowest bidder, 12,230 sq. yds. bituminous macadam pavement and keep same in repair for five years, \$1.25; 2,200 lin. ft. curb adjusted and new curb where required, 25c.; total, \$15,837; Barber Asphalt Paving Co., \$16,769.30; Asphalt Construction Co., \$16,119. West 165th st., from Anderson ave. to Lind ave., Atlanta Construction Co., lowest bidder, 2,600 sq. yds. new granite block pavement on sand foundation, laid with cement grout joints, and keep same in repair for 1 year, \$2.54; 600 lin. ft. new curb, 70c.; 1,350 lin. ft. old curb, reset, 23c.; 150 sq. ft. new bridge stone for cross walks, 50c.; 1,250 sq. ft. old bridge stone, relaid, 10c.; total, \$7,534; L. J. Moran, \$8,224; M. Baird Contracting Co., \$8,418; Asphalt Construction Co., \$8,397, and J. Farrell, \$8,333.

New York, N. Y.—Furnishing materials and reconstructing and surfacing with asphaltic concrete, the Bronx and Pelham Parkway, from the Southern blvd. to the Butler st. road, Borough of Bronx, about 15,210 sq. yds., (a) price per sq. yd., (b) totals: Asphalt Construction Co., 208 Broadway, (a) \$1.05, (b) \$15,971; Barber Asphalt Paving Co., 30 Church st., (a) 88c., (b) \$13,385; Sicilian Asphalt Paving Co., 41 Park Row, (a) \$1.08, (b) \$16,427; Uvalde Asphalt Co., 1 Broadway, (a) \$1.04, (b) \$15,818.

Canton, O.—Improvement of the Canton and New Berlin road, Stark County, as follows: Ohio Engineering Co., Elyria, \$20,500; William H. Stanton, Canton, \$22,040; Phillip Deffenbacher & Sons, Massillon, \$21,434; H. P. Kneisly, Columbiana, \$20,374; S. A. Palmer, Marietta, \$22,500; McGinty Contracting Co., \$22,274; F. A. Downs, Canton, \$21,800.—J. C. Wonders, State Highway Commissioner.

Chester, Pa.—Paving about 30 streets: Standard Bitulithic Co., Philadelphia, \$2.23 for paving in accordance with specifications, with the exception of 3d st. and Highland ave., in which case the price was made \$2.24; Barber Asphalt Paving Co., prices ranged from \$1.64 per sq. yd. to \$1.84, according to specifications as to binder and other details; for 3d st. and other streets on which the heaviest traffic concentrates, \$1.94; Dickerson Paving and Construction Co. bid on all streets; \$1.60 was standard price for Amesite material, bitulithic \$2.55 per sq. yd.; prices for the vit. brick averaged: Metropolitan block, \$2.35; Mack block, \$2.27; Montello, \$1.95; Saxton, \$2.12; Clearfield, \$2; Grafton, \$2.27; Edwin H. Vane, Philadelphia, wood block, 3-in. block, \$2.74 per sq. yd.; 3½-in., \$2.94; 4-in., \$3.64; alternate bid on own specifications, 3-in., 5-in. concrete and 1-in. sand base, \$2.62; Atlantic Bitulithic Co., from \$2.15 per sq. yd. to \$2.35, in accordance with the specifications for foundations; Filbert Paving & Contracting Co., on the streets where 6-in. foundation is required, \$1.67; where 4-in. foundation is to be used, \$1.49; United Paving Co., Atlantic City, N. J., bitulithic, \$2.16 to \$2.28; McAvoy vit. shale block, \$2.19 to \$2.42; Mack repressed block, \$2.28 to \$2.50½.

Philadelphia, Pa.—Repaving Arch st. with wood blocks, total about 39,000 yds.: Edwin H. Vane, \$3.49; George Ruch, \$3.19; Barber Asphalt Co., \$2.99, for wood block, with new foundation; Barber Co. for gran-

ite block, with new foundation, \$3.07 for ordinary, and \$3.47 for selected granite; Vane, \$3.39 and Ruch \$3.34 for granite blocks with new foundation; new work on old foundation, Vane, \$3 for granite and the same for wood blocks; Ruch, \$2.84 and \$2.74, and Barber, \$2.23 and \$2.29, respectively, for granite and wood without renewing foundation; American Creosote Co. submitted bid, but as it was not accompanied by bond was not read.

Pittsburg, Pa.—Improving (a) the Monongahela River road, extension No. 1, (b) Butler road, (c) Brighton road: (a) Ridge Bros. Co., 407 4th ave., at \$10,486; (b) Ott Bros. Co., 414 Washington ave., at \$21,416; (c) M. O'Herron Co., South 1st and McKean sts., at \$5,691.—R. J. Cunningham, County Comptroller.

Seattle, Wash.—East John st., paving, regular and alternative bids: E. E. Hall & Co., \$5,666.95; \$5,666.95; Barber Asphalt Paving Co., \$2,672.20; \$2,723.70; Lane st. et al., concrete walks, W. H. Smith, \$6,623.40; J. H. Tolman, \$6,604.46; alley in block 17, Boren, Denny and Yesler's addition, paving, Will Kopta, \$5,275.15; Graham st., planing, Rufus Buck, \$5,803; C. Kupples, \$6,545; H. P. Mapes, \$6,300; Hepler & Green, \$6,597; J. L. Stanley, \$6,650; Anderson & Co., \$5,897.50; De Long, B. & Q., \$5,880; N. D. Johnson, \$6,755; alley in block 30, Heirs of S. A. Bell's, second addition, grading, Agassiz & Hadley \$1,184; W. Kopta, \$1,596; Hall Bros., \$1,214; N. P. Johnston, disqualified; M. Lambert, \$1,250; Rainier ave., grading, Sloan Bros., \$37,785; A. Peterson & Co., \$34,802.50.

SEWERAGE

Monrovia, Cal.—Citizens have voted \$120,000 bonds for installation of sewer system.

Sacramento, Cal.—City, County and State Health Officers will jointly consider better sewerage system in Oak Park.

Wilmington, Del.—Board of Health has decided to ask Council for appropriation with which to complete construction of Clement's Run sewer, between Oak and Foundry sts.

Rome, Ga.—Citizens will vote Dec. 6, postponed from Nov. 8, on \$50,000 bonds to extend sewer system.

East Moline, Ill.—Council has passed improvement ordinance calling for laying of sewer system south of the railroad tracks; plans and specifications prepared by City Engineer Paddock; approximately seven miles of sewer will be laid; cost, \$55,000.

Bicknell, Ind.—W. J. Nicholson and Jacob S. Spiker, Vincennes, have been granted franchise to build and operate sewerage system.

Seymour, Ind.—Bids will be received by Board of Public Works for 400 lin. ft. of 12-in. vitrified pipe sewer.—E. B. Douglas, City Engineer.

South Bend, Ind.—Plans looking to installation of monster trunk sewer in the southern section of city, to cost approximately \$100,000, have been announced.

Fort Scott, Kan.—Council has decided to extend Seventh District sewer. Councilman H. W. Hughes can be addressed.

Leavenworth, Kan.—Bids will be asked for building sewer in alley in block 112, Western addition, and for paving alley in block 6, Day's addition.

Nicholasville, Ky.—Citizens will vote Nov. 8 on \$20,000 bonds to install sewerage system.

Opelousas, La.—City Board of Health has recommended establishment of a sewerage system for this city and the formation of sewerage district.

Quincy, Mass.—City has awarded \$6,000 sewer bonds to E. H. Rollins & Sons.

Detroit, Mich.—Council has directed Department of Public Works to advertise for bids for construction of twelve lateral sewers through alleys.—J. J. Haarer, Commissioner.

Kalamazoo, Mich.—Citizens will vote this fall on following bonds: \$20,000 for sanitary zone sewer system; \$1,000 for Bryant st. storm sewer and \$600 for Greenwich Place sewer.

Laurium, Mich.—Installation of septic system or purifying plant is being considered.

Duluth, Minn.—City Engineer T. F. McGilvray has suggested plan to care for storm water.

Virginia, Minn.—Council is considering construction of storm sewer and sanitary sewer in end of city.

Mexico, Mo.—City Engineer E. F. Ketter is preparing plans for 3,000 ft. of vitrified pipe sewer.—Wallace Dearing, City Clerk.

Bloomfield, N. J.—Council has rejected all bids for construction of proposed storm drain in Watsessing section.

Trenton, N. J.—Council is considering construction of sewers in Willow, Calhoun and Pine sts. and Ohio ave.

Clayton, N. M.—City is considering installation of sewers.

Cornwall, N. Y.—Matter of sewerage is being considered.

Hornell, N. Y.—Sewers on four streets, to Gray & Miller, city.

Oswego, N. Y.—The Mayor and the City Chamberlain have been authorized to make an investigation and report on land necessary for proposed west side sewerage system and disposal plant, according to plans of City Engineer as approved by Engineering Experts Hering and Fuller, New York City.

Rome, N. Y.—City Engineer Plunkett has presented estimates, plans and specifications for sewer extensions to cost \$940.28.

Yorkville, N. Y.—Citizens have voted bonds for installation of sewer system; Board of Trustees will make effort to let contract by Nov. 1.

Akron, O.—Council has passed ordinance directing preparation of plans for construction of sewer through Mille Park; Finance Committee is considering \$60,000 bond ordinance for trunk sewer from Otto st. to proposed sewage disposal plant.

Barberton, O.—Council will ask for bids for sanitary sewer on Tuscarawas ave. and for draining and grading Rose st.

Cincinnati, O.—Council has decided to sewer Harrison ave.

Defiance, O.—Estimates will be prepared for extension of Walnut and Grey st. sewers.

Niles, O.—Bids will be asked for construction of sewer in Park ave.; construction of sanitary sewer in Hartzell ave. is being considered.

Checotah, Okla.—City is considering installation of sanitary sewer system; cost \$40,000.

Muskogee, Okla.—Consulting Engineer Alexander Potter of New York will consult with City Engineer Clonts, members of the Council and Mayor McGarr relative to surveys made by the latter engineer as a preliminary for plans for conducting the sewage to the Arkansas River by means of large intercepting sewer.

Marcus Hook, Pa.—Council has decided to construct sewer in East 9th and Church sts.—H. R. Aaron, Clerk.

Sharon, Pa.—Council has postponed until next meeting matter of opening bids for preparing plans for the proposed sanitary sewerage system and disposal plant; bidders ordered to file bonds for \$1,200.

Front Royal, Va.—State Engineer A. F. Brown has been selected as Consulting Engineer for construction of proposed sewer system.

Richmond, Va.—Street Committee will ask for bids for following sewers: Lombardy st., \$33,560; Sycamore, \$38,488; Meadow, \$439,689; Hampton, \$68,138.—Chas. E. Bolling, City Engineer.

Puyallup, Wash.—Council has decided to build drain ditch to carry away water that floods West Main st.

Moundsville, W. Va.—Citizens have voted bonds to install sewerage system.

Milwaukee, Wis.—Council has recommended construction of sewers in various streets.—H. E. Briggs, Commissioner of Public Works.

Snohomish, Wash.—Bids will be asked for sewerage system.

Stoughton, Wis.—Plans for proposed city sewerage system have been approved by Council; four acres of land in eastern portion of city has been purchased for septic sewage disposal tanks.

Vancouver, B. C., Can.—City Engineer has prepared estimate on cost of lateral sewers which will drain into trunk sewer at present under construction in West Mount Pleasant; total cost approximately \$21,480.

CONTRACTS AWARDED

Rockford, Ill.—To G. Maffioli, for construction of sewer in Central ave., Peach st. and Independence ave.

Boston, Mass.—To Luke D. Mullen, 161 Devonshire st., for construction of sewers in Martan, Leslie and Wildwood sts., \$5,168.

Bemidji, Minn.—To Thomas Johnson, city, for construction of septic tank, \$2,250.

Long Prairie, Minn.—Constructing partial sewer system to Bosworth Bros., Ada, \$3,390.

Ferth Amboy, N. J.—Constructing 15-in. pipe sewer in Sutton st. and 12-in. pipe sewer in Compton ave. to Peter Peterson: Compton ave., pipe, 95c.; manholes, \$29.20; receiving focus, \$64.20; total \$1,100.20; Sutton st., pipe, 82c. manholes and basins same as above.

Niagara Falls, N. Y.—Sewer, Highland ave., to W. A. Shepard & Co., \$9,670; Whirlpool ave., to Tony Reynolds, \$2,723; LaSalle ave., to Rinaldo Dominico, \$2,355; 2d st., to Nick Nolfe, \$235.

Cincinnati, O.—Building sewer in Marshall ave., to Kirchner Construction Co., \$54,791.

Oberlin, O.—To Buckingham, Clary & Ziegler, Montroseville, for construction of a sewer in Hollywood st.

McKees Rock, Pa.—Sewer in Robb st., to F. Manella.

Parkersburg, W. Va.—Sewers on Teft and two other streets, to John W. Curry, \$2,641.50.

WATER SUPPLY

Mobile, Ala.—Engineer Smith has reported cost to complete sewer and water system of Mobile so as to take in the entire portion inhabited within the city limits at \$600,000; mains are to be of sufficient size to care for any possible growth.

Talladega, Ala.—Dr. Charles S. Northern desires correspondence with parties interested in installation of precipitation and filtration plants for water works.

Los Angeles, Cal.—Fire Commission has asked Water Board to advertise at once for high pressure c.-i. pipe and to lay mains along 1st, 2d, 3d and 4th sts.

Monrovia, Cal.—Citizens have voted \$50,000 bonds for water plant and distributing system.

Orland, Cal.—Orland Promotion Club is urging installation of municipal water works.

Collbran, Col.—Citizens have voted \$9,000 bonds for construction of water works.

Dayton, Fla.—Council has appointed committee to investigate methods of softening city water; cost about \$2,000.

Miami, Fla.—C. T. McCremmon desires prices on water system and pumping plant for \$16,000 hotel.

St. George's Island, Fla.—Company has been organized to construct water works.—G. W. Sexton, Tallahassee, President.

Rome, Ga.—City has postponed date of election from Nov. 8 to Dec. 6 on \$75,000

New York, N. Y.—Constructing sewers in Westchester and Glover Aves.—Bronx Boro.—(A) J. J. Shea Contr. Co., 500 5th Ave., N. Y. City, awarded contract; (B) F. V. Smith Contr. Co., 147 E. 125th St.; (C) Fox-Hennessy Co., 81 E. 125th St.; (D) Anita Constr. Co., 2975 Marion Ave.; (E) Alamo Constr. Co., 215 W. 125th St.; (F) Perillio & Sheil, Williamsbridge, N. Y.; (G) Briggs & McLaughlin, 1007 Union Ave.; (H) Geo. M. Dunn, E. 174th St., Bronx.; (I) John F. Higgins, 1446 Prospect Ave.

	A	B	C	D	E	F	G	H	I
136 lin. ft. 3 ft. 6 in. sewer.....	\$11.11	\$15.00	\$10.00	\$9.00	\$15.00	\$10.00	\$9.00	\$8.00	\$10.00
87 lin. ft. 3-ft. sewer.....	9.42	10.00	9.50	8.00	15.00	10.00	8.00	8.00	10.00
1748 lin. ft. 24-in. pipe sewer.....	2.91	6.00	6.00	5.00	6.00	5.00	6.00	4.00	5.00
1103 lin. ft. 20-in. pipe sewer.....	2.46	5.00	5.00	5.00	5.00	4.00	5.00	4.00	4.50
2302 lin. ft. 18-in. pipe sewer.....	2.03	5.00	3.50	4.00	4.00	3.50	4.00	3.00	4.00
1962 lin. ft. 15-in. pipe sewer.....	1.76	4.00	3.00	3.00	3.50	3.40	3.50	3.00	3.00
6325 lin. ft. 12-in. pipe sewer.....	1.58	4.00	2.50	3.27	3.00	3.30	3.00	2.10	2.90
962 spurs.....	1.00	2.00	1.00	1.00	1.10	.01	.....	.01	.50
144 manholes.....	67.28	50.00	60.00	50.00	40.00	55.00	60.00	55.00	63.00
22 receiving basins.....	149.50	170.00	160.00	150.00	160.00	160.00	200.00	180.00	150.00
2800 cu. yds. rock excav.....	3.00	3.00	4.00	2.00	3.00	2.90	3.00	3.00	2.48
200 cu. yds. broken stone.....	1.00	.....	1.75	2.00	1.00	2.50	1.00	2.00	1.00
425 cu. yds. Class B concrete.....	4.37	.....	3.00	5.00	6.00	7.00	6.00	6.00	6.00
7000 lbs. steel bars.....	.05	.05	.04	.03	.03	.03	.03	.03	.05
10,500 lin. ft. piles.....	.30	.....	.45	.35	.25	.40	.30	.30	.30
100 M. ft. timber.....	30.00	.....	40.00	30.00	30.00	35.00	30.00	25.00	25.00
200 lin. ft. drain pipe.....	.01	.....	1.00	1.00	2.00	2.00	.....	.50	1.00
Totals.....	\$59,147	\$85,185	\$82,917	\$78,444	\$81,761	\$82,012	\$83,523	\$68,372	\$77,937

bonds for improvement and extension of water works.

Barrington, Ill.—Board of Local Improvements has passed resolution for extension of water mains on Walnut st.; cost \$1,495.90.

Bicknell, Ind.—W. J. Nicholson and Jacob S. Spiker, Vincennes, have been granted franchise to build and operate water works system.

Vincennes, Ind.—Board of Public Works has adopted plans and specifications as prepared by Campbell & Osterhage for removal of the old boiler of city hall and the installation of new one; bids asked.

Altoona, Kan.—Plans are being prepared by Engineers J. S. Worley & Co., Reliance Bldg., Kansas City, Mo., for system of water works; cost \$20,000.—G. A. Wiley, City Clerk.

Onaga, Kan.—Water works will be constructed at cost of \$18,000.—Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., Engineers.

Stafford, Kan.—Citizens will vote Nov. 19 on \$30,000 bonds for water works.

Nicholasville, Ky.—Citizens will vote Nov. 8 on entering into contract with corporation or company to furnish water.

Baltimore, Md.—Board of Estimates will allow Water Board \$200,000 for additional pump at Mount Royal pumping station.—Alfred M. Quick, Water Engineer.

Deerfield, Mass.—Village is considering water supply.

Hartford, Mich.—City will extend water mains at cost of \$8,000.

Kalamazoo, Mich.—Additional bonding appropriation amounting to \$40,674 will be asked by Water Committee for purpose of laying necessary water mains.

Ortonville, Minn.—Ordinance has been passed for extension of water mains.

Slayton, Minn.—Council is considering extension of water works system.

Stillwater, Minn.—Council has ordered extension of water mains on East Churchill and South 1st sts.

Tower, Minn.—Installation of water system is being considered.

Columbia, Mo.—City has selected M. E. Fawkes as engineer in charge of improvements to water works and electric light plant, including extension of water mains and installation of hydrants, two deep wells and cisterns, deep well pumps, Weber system, motor-driven air compressor and two motor-driven centrifugal pumps.

Norfolk, Neb.—The W. K. Palmer Co., Engineers, 717-720 Dwight Bldg., Kansas City, Mo., has been engaged to prepare plans and specifications for improvements in water works plant and for the construction of a new and complete municipal electric lighting plant and system.

Superior, Neb.—Water works will be improved at cost of \$20,000.—J. T. Robbins, City Clerk; Wynkoop Kiersted, Kansas City, Mo., Engineer.

Clayton, N. M.—City Board has taken over water and electric light plant; bonds for \$50,000 will be voted as soon as election can be called and entire new system of water and electric lights will be installed during coming year.

Cornwall, N. Y.—Application has been made to Village Board for introduction of water into Cliffside Park, and bids for work have been advertised for.

Geneva, N. Y.—Citizens have voted \$57,000 for construction of 20-in. water main and \$35,000 for purchase of new pump; concrete reservoir will also be built; proposition to build sand filtration plant defeated.

Hudson, N. Y.—Bids have been rejected for larger water main for supplying city below 2d st. and north of Warren st.; bids will be readvertised.

Schenectady, N. Y.—Reservoir with capacity of 10,000,000 gals. located preferably on Bevis Hill is recommended by Engineer Emil Kuschling, New York.

Asheville, N. C.—City Reservoir Commission has accepted proposition of George H. Davidson, city, to replace water-tight bottom of concrete reinforced reservoir with steel; area to be replaced, 18,000 sq. ft.; cost \$10,000.—B. M. Lee, City Engineer.

Fayetteville, N. C.—Engineer White, Durham, has prepared plans for filtration plant.

Minot, N. D.—City is considering construction of dam to conserve water supply.

Cincinnati, O.—Preliminary steps looking toward erection of four water tanks with combined capacity of 1,500,000 gals. to supply the western hills district have been taken.

East Liverpool, O.—Improvements to water works, including installation of crib system as a means of improving water supply, are being considered; also construction of a new reservoir; removal of pump station on river road to the Superior Land Co. site; extension of water service to property in Gardendale and Pleasant Heights and erection of a standpipe near high pressure reservoir on McKinnon Hill as a means of furnishing this service, and other improvements; total cost about \$300,-

000.—J. Richard Kommer and C. E. Miller, Pittsburgh, Pa., and Jas. Leaf, Rochester, Pa., Consulting Engineers.

West Carrollton, O.—Improvements of water works is being considered.

Ada, Okla.—Citizens will vote on \$100,000 bonds for water works.

Enid, Okla.—City Commissioner Hitchcock will recommend that two Laidlaw-Dunn-Gordon pumps be purchased by city for water works plant.

Toledo, Ore.—Citizens have voted bonds to install water system; water will be brought from Mill Creek, distance 4 miles; cost \$20,000.

Philadelphia, Pa.—Chief Dunlap of Water Bureau has asked for \$600,000 for increasing preliminary filters at Belmont plant and laying larger mains between pumping station and filter beds.

South Fork, Pa.—Chester & Fleming, Pittsburgh, are preparing plans for installation of filter plant for South Fork Water Co.

Newport, R. I.—Newport Water Works Co. is considering plans for reservoir in Middletown.

Shelbyville, Tenn.—J. F. Boyd proposes to install four water wheels, 400-kw generator, concrete penstocks, power house, etc., at water and electric light plant; cost \$20,000.—Solomon-Norcross Co., Atlanta, Ga., Engineers.

Cotulla, Tex.—City is considering construction of water works.—C. F. Binkley, Mayor.

Dallas, Tex.—City will sink five wells at once in Woodbine section; aver. depth, 600 ft.; bids are asked for laying 625 ft. of 24-in. pipe. J. M. Bassett, Chief Engineer of Water Department.

Georgetown, Tex.—Citizens have voted \$45,000 bonds to purchase water and light plant.

Lufkin, Tex.—Citizens have voted bonds for improvements to water works.

Ogden, Utah.—Council is considering plans for new water conduit from Cold Water Canyon to the city reservoir, and also running of pipe line down 23d st., from city reservoir to Quincy ave. to connect with distributing station; City Engineer has been instructed to prepare plans and submit estimate of the cost before calling for any bids.

Spokane, Wash.—Engineer Green of Spokane will survey route and line for gravity water system for water works.

Spokane, Wash.—Steel mains in Cable addition to be laid at a cost of approximately \$16,000 have been ordered by Council.

Waverly, Wash.—Citizens are considering election on bonds for water supply.

Fairmont, W. Va.—Council has approved recommendation of Shrewsbury B. Miller, City Engineer, for improvements to water works and appointed committee, Arthur D. Simon, Chairman, to advertise for and purchase materials required and award contracts for construction work. Pumping station has since been damaged by fire with loss of \$8,000.

Biggar, Sask., Can.—Town will expend \$15,000 on fire protection and water works.

Niagara-on-the-Lake, Ont., Can.—Citizens have voted bonds for water works extensions.

St. Catharines, Ont., Can.—Citizens will vote in January on constructing 24-in. water main from Decew Falls to this city; cost \$24,000.

Sherbrooke, Que., Can.—Tenders have been called for crusher to be used on water works reservoir.

Winnipeg, Man., Can.—To supply city with water a bill will be introduced in Council to provide for expenditure of \$10,000,000.

CONTRACTS AWARDED

Collins, Miss.—Sinking another deep well, at cost of \$1,200, to Brown Deep Well Co., New Orleans.

South Amboy, N. J.—Laying 1,500 ft. 8-in. water main, to Hardman & Dredrickson, Perth Amboy, 74c. per ft.

Schenectady, N. Y.—Laying water mains in Salina st., to Beckwith Bros.

Syracuse, N. Y.—Building two stone and brick gate houses at Woodland reservoir, to D. Rafferty & Son, \$1,925.

Bowbells, N. D.—System of water works, to George W. Kemper, \$11,850.

Cincinnati, O.—Cleaning water mains near 3d st. reservoir, to National Water Main Cleaning Co., \$4,750.

Harrisburg, Pa.—Two pumping engines in Reservoir Park, to Birdsboro Steel Foundry and Machine Co., \$15,500.

Galveston, Tex.—Laying water main in causeway, to Blodgett Construction Co., \$8,000; revised bid.

Glace Bay, N. S., Can.—Water extensions have been awarded as follows by Town Council: Laying 6-in. pipe, to S. Nicholson; 4-in. pipe, to Neil N. McDonald; 2-in. pipe, to Thomas McLean and R. D. McIntyre.

BIDS RECEIVED

Chicago, Ill.—Furnishing cement to the water pipe extension department, Meacham & Wright, 206 La Salle st., Utica natural cement, 69c. per bbl.; \$1,380 for 2,000 bb.s. Lehigh Portland cement, \$1.80 per bbl. \$180 per 100 bb.s.; Wm. E. Dee, 108 La Salle st., "AA" Portland cement, at \$1.75 per bbl., and \$175 for 100 bb.s.; Knickerbocker Ice Co., 171 La Salle st., Utica natural cement, 77c. per bbl., and \$1,540 per 2,000 bb.s.; Medina Portland cement, \$1.80 per bbl. and \$180 per 100 bb.s.; furnishing chain grate stokers for 68th st. pumping station, Illinois Stoker Co., 204 Dearborn st., \$3,510; Green Engineering Co., 115 Adams st., \$4,100; Laclede Clay Products Co., \$3,969.

Decatur, Neb.—Construction of water works system, Katz-Craig Contracting Co., Omaha, \$1,499; W. D. Lovell, Minneapolis, \$15,110; C. W. Roland, Des Moines, \$15,175, and the Des Moines Bridge and Iron Co., Des Moines, \$14,959.

Chambersburg, Pa.—Building gravity water conduit, Antonio Cocco, Philadelphia, \$55,600 and \$57,000, according to route, complete by July 31; Stitzer Co., Philadelphia, rates per foot by diameter of pipe and detailed on digging, etc., 135 working days; H. C. Brooks Co., Philadelphia, same kind of bid, 150 working days; U. S. Construction Co., Columbus, O., \$29,197 for route based on 500 yds. of rock excavation, adding or deducting \$2 per yd.; the Bratton Co., Philadelphia, detailed bid, time to June 1st; Adolph Jeffalo, Philadelphia, detailed bid, 200 working days; W. H. Murphy & Son, Chambersburg, detailed bid, 8 months; A. B. Purnell, Pittsburgh, detailed bid, Sept. 1st; Pitt Construction Co., Pittsburgh, detailed bid, 120 good working days; F. J. Riley, Lancaster, detailed bid, July 31st; Applegate & Pascuzzi, Emporium, Pa., detailed bid, July 1st; John D. Kuhn, Greensburg, Pa., detailed bid, 175 good trench working days; Quigley Hafer, Chambersburg, detailed bid; John C. Schrade, Williamsport, Pa., detailed bid, 225 days; bids will be sent to Engineer John Birkinbine.

LIGHTING AND POWER

Montevallo, Ala.—Dr. R. A. Berry is considering installation of electric light and power plant.

Tucson, Ariz.—Council is considering enlargement of city water power at up-river pumping station; cost about \$100,000.

Anderson, Cal.—Chamber of Commerce has appointed a committee to arrange for arc lights to be placed on streets.

Sacramento, Cal.—San Joaquin Light and Power Co. will issue \$1,500,000 in capital stock at once for developing and extending system.

Wilmington, Del.—Board of Water Commissioners has adopted resolution authorizing Chief Engineer Kienle to inquire into cost of installing plant to generate electric current for needs of the water department.

Fort Meade, Fla.—Council has granted S. T. Rivers franchise for electric light and power plant.

St. George's Island, Fla.—Company has been organized to construct electric light system.—G. W. Saxon, Tallahassee, President.

Sanford, Fla.—City will install additional machinery in electric light plant; cost \$20,000.

Augusta, Ga.—Augusta Street Railway and Lighting Co. and Augusta-Aiken Interurban Railway will make improvements and extensions.—F. Q. Brown, Redmond & Co., New York, President.

Bluffton, Ind.—Installation of boulevard lights is being considered.

Magnolia, Ia.—Citizens have voted to grant electric light franchise to Bullock Service Co.—E. A. Bullock, Omaha, Neb., President; Jas. D. Stuart, Town Clerk.

Prairie City, Ia.—A. F. L. Breeden, manager Colfax electric light and power plant, Colfax, has secured franchise; 6,600-volt transmission line will be erected; company is in the market for materials.—C. A. Archer, Superintendent.

Pretty Prairie, Kan.—J. J. Siebert has been granted franchise to establish electric light plant.

Stafford, Kan.—Citizens will vote Nov. 19 on \$25,000 bonds for light plant.

Bogalusa, La.—Bogalusa Public Service Corporation has been organized to construct electric light systems, etc.; capital \$500,000. C. W. Goodyear, Jr., W. H. Sullivan and W. G. Pearsall are interested.

Lewiston, Me.—Union Electric Co. is preparing preliminary plans for hydroelectric development at Clark's Rips; company proposes to develop 20,000 h.p. and transmit same about 10 miles to Lewiston and Auburn.

Grand Rapids, Mich.—Grand Rapids-Muskegon Power Co. has decided to expend about \$200,000 in improvements, including extensions to North Park, Mill

Creek, Spring Lake and from the Kent City substation to Casnovia, Sparta and along the lake front at Muskegon.—A. F. Walker, Superintendent.

Niles, Mich.—The Niles Gas Co. is considering addition to present gas plant.—C. G. Atkinson, President.

Olivet, Mich.—Olivet village and college will have electricity, which will soon illuminate streets and houses, instead of kerosene; a stock company has been formed and given contract by the Village Council, subject to granting of a franchise by the people at a special election to be held within 60 days; if the franchise is granted the company agrees to have the plant in operation within nine months; E. M. Arnos, treasurer of college, is promoter of project.

Chisholm, Minn.—Mesaba Range Power Co., capital \$250,000, has been formed to take over business of Range Power Co.; improvements will be made.—A. L. Ober, Chatfield, President.

Proctor, Minn.—Provisions for lighting town at early date are being considered by Commercial Club.

King City, Mo.—Fred Thompson has submitted proposition to Council to install electric light plant.

Norfolk, Neb.—The W. K. Palmer Co., Engineers, 720 Dwight Bldg., Kansas City, Mo., has been engaged to prepare plans for complete electric light plant.

Newark, N. J.—Mayor Haussling has signed resolution providing for extension of the city hall lighting plant to other municipal buildings in center of city.

Clayton, N. M.—City Board has taken over electric light and water plant; improvements will be made; see "Water Supply."

Clyde, N. Y.—Clyde electric light and gas plants are being rebuilt and in spring new machinery will be installed to supply village and vicinity with electricity and gas; new gas tank will be installed.

Phelps, N. Y.—The J. Q. Howe's Sons' Electric Light Co. has been granted franchise to erect poles and string wires on any highway.

Akron, O.—Sidney E. Conner, Akron, and Edward B. Taylor, Pittsburg, have applied to Council for franchise to establish a central heating system.

Marcus Hook, Pa.—Council is considering proposition of Superintendent A. R. Granger, of Beacon Light Co., Chester, to install electricity in borough.

Philadelphia, Pa.—Chief McLaughlin, of Electrical Bureau, has recommended extension of improved arc lighting system in central section of city.

Kingston, R. I.—Residents of the village and of West Kingston are uniting in a petition to the Sea View Railroad Co. asking installation of facilities for electric lighting in homes and in some cases for electric power for commercial purposes.

Shelbyville, Tenn.—J. F. Boyd proposes to make improvements at light and water plant; see "Water Supply."

Clarksville, Tex.—Clarksville Ice and Light Co. is planning to rebuild plant; machinery will be purchased.

Eagle Pass, Tex.—City Commission has decided to have erected at each street intersection in business district 240-candlepower arc light, and in middle of blocks 80-candlepower lights.

Georgetown, Tex.—Citizens have voted \$45,000 bonds to purchase light and water plant.

Texas City, Tex.—Texas City Transportation Co. has authorized installation of another 500-kw electrical generator.—H. B. Moore, General Manager.

Graham, Va.—Council is considering granting franchise to Graham Railway and Electric Co.

Spokane, Wash.—W. E. Moore, Hydraulic Engineer, Paulsen Block, will be employed by city to advise the Council in connection with proposed establishment of municipal power plant.

Spokane, Wash.—With purchase of power site owned by Big Bend Water Power Co., four miles below Lapray bridge, and power site owned by H. L. Moody and associates above, the Washington Water Power Co. is preparing to build largest electrical plant on Spokane River.

Milwaukee, Wis.—Council Committee on Street Lights has taken trip to various sections of the city to determine need of better lighting facilities, for which petitions have been received.

New Glarus, Wis.—Plans are being considered for enlarging municipal electric light plant.

Wilton, Wis.—Franchise has been granted to Carl Vogel to install electric light plant.

CONTRACTS AWARDED

Little Rock, Ark.—To Loftis Callamore, to erect electric light plant at foot of Broadway; capacity for 1,000 lights; cost \$7,500; plans by Theodore Sanders, 710 Southern Trust Bldg., Little Rock; machinery contract awarded.—William L. Rogoski, Chairman Electrical Committee.

Santa Cruz, Cal.—To Coast Counties Light and Power Co. for lighting city, \$4.50 per arc lamp per month.

Decorah, Ia.—Constructing gas plant, to the American Construction Co., Newton, \$27,500.

Jasper, Minn.—Construction of carburated water gas works, to American Construction Co., Newton, \$7,350.

St. Louis, Mo.—By Union Electric Light and Power Co., to the General Electric Co., Schenectady, N. Y., for 16 8-series mercury arc rectifiers for use in connection with direct-current arc lamps, each outfit consisting of panel, two tubes, constant-current transformers, exciting transformers, static discharger and direct-current reactor.

Williamston, N. C.—To Virginia-Carolina Peanut Co., for lighting town with electricity.

Toledo, O.—To A. Bentley & Sons, 37 N. Huron st., for subpower plant of the Rail Light.—Bacon & Huber, Spitzer Bldg., Architects.

Clifton Heights, Pa.—Street lighting, to Delaware County Electric Light Co.

Tillsonburg, Ont., Can.—Erection of hydroelectric power house, to Tillson Co., \$1,200.

FIRE EQUIPMENT

Montgomery, Ala.—Mayor Wm. A. Gunter, Jr., has recommended erection of fire station in southern part of city.

Little Rock, Ark.—City will erect \$4,000 fire engine house on 4th st.—Geo. A. Stratman, Mayor.

Claremont, Cal.—Board of Trustees will consider purchase of auto fire truck.

Fairfield, Conn.—At least \$2,000 has been received through various sources for procuring of an auto chemical for the fire department.

Mystic, Conn.—Fire District has decided to purchase \$4,500 gasoline engine.—C. L. Allyn, Chairman Purchasing Committee.

Belvidere, Ill.—City will purchase 400 ft. of fire hose. Address Chief Gallagher of Fire Department.

Moline, Ill.—Fire, Water and Light Committee will at once purchase auto truck.—Alderman V. E. Brown, Chairman. J. I. Hawk, Fire Chief.

Dunkirk, Ind.—Council will erect \$4,000 fire house this fall.

Elwood, Ind.—City is considering purchase of large life-saving net for fire department.

Franklin, Mass.—Town will vote Oct. 26 on appropriation for installation of fire alarm system.

Grafton, Mass.—Town will hold another meeting to decide on purchase of chemical engine.

Leominster, Mass.—Town will consider purchase of auto fire truck.

Medford, Mass.—Alderman Wetherbee is urging purchase of auto fire apparatus.

Swampscott, Mass.—Town is favorable to purchase of first-class auto combination engine.

Swampscott, Mass.—Town will vote on \$1,000 additional appropriation for fire department.

Billings, Mont.—Plans by Architect McAllister have been adopted for erection of fire station; bids will soon be asked.

Bayonne, N. J.—Council has passed, over veto by Mayor John J. Cain, resolution appropriating \$1,650 for repairs to Engine House No. 4.

Geneva, N. Y.—Citizens have voted \$4,500 to pay for new fire truck.

Saranac Lake, N. Y.—As soon as plan is decided on, Board of Village Trustees will erect fire house.

Tuckahoe, N. Y.—Tuckahoe Hose Co., Tuckahoe, and Waverly Engine and Hose Co. have voted that sum of money aggregating about \$12,000 be expended for the purchase of automobile apparatus for each company.

Uhrichsville, O.—Council will purchase hose wagon; cost \$1,250.

Portland, Ore.—Woodlawn residents are urging installation of fire engine.

Frackville, Pa.—Architect W. D. Hill, Pottsville, has prepared plans for erection of fire house.

Beaumont, Tex.—Fire Committee will purchase 5,000 ft. of fire hose.

Corpus Christi, Tex.—Committee of local citizens is co-operating with fire department with view to purchasing a combined chemical and hose automobile fire engine such as was recently purchased by San Antonio.

Palestine, Tex.—City Commission has rejected bids for fire equipment and park bonds.

Texarkana, Tex.—Mayor Kline has been authorized to consult with Chief Hussey of fire department relative to purchase of apparatus for charging batteries of fire alarm system and automobiles.

Snohomish, Wash.—Street Commissioner

has been authorized to purchase 500 ft. of fire hose.

Milwaukee, Wis.—Fire Chief Clancy will recommend establishment of auto equipment in Eighteenth Ward.

CONTRACTS AWARDED

Freeport, Ill.—Fire house in West Freeport, to Gorman Bros., \$4,793.85; plumbing, to Eutzler & Walsh, \$327.50, and heating, to M. L. Parker Co., \$377.

Louisville, Ky.—Underground fire alarm system, to Jas. Clark, Jr., Co., \$26,971.38.

Baltimore, Md.—Two chemical engines, to La France Engine Co., \$3,590 each; steam engine, to Ahrens Fire Engine Co., \$6,800.

Boston, Mass.—To American-La France Fire Engine Co., Elmira, N. Y., for one first size steam fire engine, \$5,250, and one second size engine, to International Power Co., Providence, R. I., \$4,650.

Boston, Mass.—To W. L. Morison for fire protection at City Hospital, \$44,903; other bidders were: John A. Rooney, \$56,621; Jones & Meehan, \$82,764.

Salt Lake City, Utah.—Furnishing 2,500 ft. of fire hose, to New Jersey Car Spring and Rubber Co., 32½¢ per ft. and 2,500 ft., to Fairbanks-Morse Co., 77½¢ per ft.

BIDS RECEIVED

Eveleth, Minn.—Furnishing fire alarm boxes, Chicago Bell Co., lowest bidder.

Newark, N. J.—Auto fire engine for Vailsburgh section; lower priced machines are not engines but merely auto hose wagons: Knox Auto Co., \$8,500; Robinson, F. A. Co., two bids, \$5,500 and \$8,500; James Boyd & Bro., three bids, \$4,250, \$4,385 and \$6,480; Pope-Hartford Co., \$5,000; American-La France Co., three bids, \$5,500, \$5,250 and \$7,800; Kanawha Manufacturing Co., two bids, \$4,750 and \$5,600; White Motor Car Co., \$5,500; Kelly Motor Co., \$4,650; Webb Motor Co., four bids, which ranged from \$7,500 to \$8,950.

Newark, N. J.—Proposed addition to No. 11 Engine Co.'s house at Central ave. and South 9th st.; mason work, William G. Sharwell & Co., \$1,440; carpenter work, same bidder, \$1,570; plumbing, ventilating, heating, etc., A. Taaffe & Co., \$1,326; electrical work, William E. Lewis, Jr., \$49.50.

BRIDGES

Texarkana, Ark.—Cotton Belt, Kansas City Southern and Texas and Pacific railroads have submitted to Council plans for viaduct over Oak st.

Boise, Ida.—Plans have been prepared for erection of bridge at 9th st.—W. L. Cuddy, Clerk County Commissioners.

Indianapolis, Ind.—Mayor Shank will take up with Board of Public Works the question of building new bridges across Piques Run at East 10th st. and Dorman st.

Newcastle, Ind.—Grand Jury will recommend placing a cement arch over Bowery Brook; cost \$50,000.

Escanaba, Mich.—Proposition to build a bridge over Escanaba River at Wells is under consideration in Delta County; cost \$40,000.

Kalamazoo, Mich.—Citizens will vote on bonds this fall to erect proposed Gull and Mill st. bridges; cost \$25,000 and \$16,000.

Stillwater, Minn.—Council has authorized City Engineer to employ expert to make inspection of condition of the bridge over St. Croix to determine whether repairs can be made to keep bridge in use a few years more, or whether new one must be built in immediate future.

Guilford, Miss.—Harrison County will construct bridge across Red Creek on Bond and Poplarville roads.

Newark, N. J.—Joint Bridge Committee of Essex and Hudson Boards of Freeholders has decided to recommend erection of new bridge over Passaic River at Bridge st.

Albany, N. Y.—State Engineer and Surveyor Williams has approved plans for the erection of a concrete bridge on Burdick road; over Barge Canal, on contract four.

Mount Vernon, N. Y.—New York, Westchester and Boston Railroad has submitted plans to city for bridge on 4th st.

Cincinnati, O.—County Commissioners are considering erection of bridge on Taylor Creek road; also repair of Union bridge over Little Miami River.

Coshocton, O.—County Commissioners have rejected bids for erection of proposed Jacob Balo concrete bridge in Virginia Township.

Carlisle, Pa.—Messrs. John E. Hertzler, Samuel L. Eppley and William Martin, Commissioners of Cumberland County, will hold conference with Board of Commissioners of York County No. 2 to consider feasibility of erecting joint bridge over Yellow Breeches Creek, in New Cumberland.

Pittsburg, Pa.—North Side Chamber of Commerce is considering connecting Woods Run with McKees Rock by bridge.

Shippensburg, Pa.—Borough Council has rejected all bids for construction of King st. bridge; new bids will be received; bidders to submit their own designs and estimates.—T. J. Brereton, Chambersburg, Engineer.

Shannock, R. I.—Town Councils of Richmond and Charlestown are considering erection of bridge.

Nashville, Tenn.—Bridge at Hyde Ferry, on the Cumberland River, will be repaired by Davidson County Commissioners; cost \$33,000.

El Paso, Tex.—City Engineer Todd has completed plans for proposed viaducts east of city on Smelter road.

Richmond, Tex.—Fort Bend County will vote Nov. 4 on \$30,000 bonds for construction of bridge across Brazos River at Thompson, and \$30,000 for bridge at Orchard.

Richmond, Va.—Council has authorized Street Committee to obtain plans and specifications for bridge to replace present Mayo's bridge; estimated cost \$350,000, exclusive of site and approaches.—Chas. E. Bolling, City Engineer.

Wheeling, W. Va.—Board of County Commissioners has decided to reject all bids on new bridge to be erected over Wood's Run and ask for new ones.

CONTRACTS AWARDED

Avon, Ill.—Bridge across Nigger Creek, to Clinton Bridge Co., \$1,877.

Topeka, Kan.—Completing Melan bridge extension, begun last spring by Johnson & Co., Kansas City, and abandoned by them last month, to James O'Conner & Son, Kansas City, Mo., \$33,397; from this they agree to deduct cost of material, amounting to about \$6,000, which was used by Johnson & Co.

Cincinnati, O.—Concrete bridge on Cleves and Warsaw pike, to John Nickoson, \$1,756.

Zanesville, O.—Bridge at 5th st., to Mt. Vernon Bridge Co., \$209,985.

Pittsburg, Pa.—Filling approach 7 Sewickley Creek bridge, to R. S. Dickson, \$585; raising parapets, Bridge No. 1, Park's Run, to same, \$385.—R. J. Cunningham, County Comptroller.

West Chester, Pa.—By Commissioners of Chester County, to George Dole for erection of plate-girder and concrete bridge over Red Clay Creek, Kennett Township, \$2,759.

BIDS RECEIVED

Mobile, Ala.—Culvert pipe to take place of small wooden bridges over county road, Canton Culvert Co., Canton, O., steel and non-resistible pipe of certain sizes, \$1,646; Austin Bros., Atlanta, \$1,390 for the full quantity, or \$742 for half quantity; Turner Supply Co., Mobile, \$1,408.

Hamilton, Mont.—Bids have been received for erection of bridge across Bitter Root River at Stevensville; lowest bid \$12,000; action deferred on account of legal obstruction.

Plymouth, Pa.—Erecting bridge: Pennsylvania Bridge Co., style 6A, \$266,969; style 6B, \$276,973; time, 480 days; M. H. Stibbins, Wellsboro, style 6A, \$268,500; style 6B, \$279,030; time, 480 days; Northwestern Construction Co., 6A, \$271,879; time 350 days; style 6B, \$283,776, time, 350 days.

York, Pa.—Bridge across Fishing Creek: Stone arch, Charles Witmer, \$763; Wagman Bros., \$895; Nelson-Meredith Co., \$1,580; Hartley, Ziegler Co., \$1,185; concrete, Hartley, Ziegler Co., \$1,500; Nelson-Meredith Co., \$1,580; concrete bridge planned to be erected across Muddy Creek as follows: George A. Wagman, \$1,280; Hartley, Ziegler Co., \$1,475; Nelson-Meredith Co., \$1,700; double stone arch bridge in Dover, Hartley, Ziegler Co., \$976.65; George A. Wagman, \$1,100; Nelson-Meredith Co., \$1,619.

MISCELLANEOUS

Gadsden, Ala.—New garbage cans will be purchased at an early date.

Montgomery, Ala.—Mayor Wm. A. Gunter, Jr., has recommended further beautification of parks, playgrounds and streets.

Atlanta, Ga.—Trustees of Grady Hospital will at once ask bids for erection of proposed \$100,000 building.

Atlanta, Ga.—Special committee has recommended erection of proposed reduction and incinerating plant for outside city limits.—Dr. W. L. Gilbert, President Board of Health.

Chicago, Ill.—All bids have been rejected by B. J. Mullaney, Commissioner of Public Works, for furnishing six dump cars; new bids will be asked.

Owensville, Ind.—Council will let contract about 7th of November for overhauling and remodeling town hall.

Sioux City, Ia.—South Dakota Interurban Railway Co., headquarters Sioux City, is about to undertake construction of steam railway from Sioux City to Chamberlain, S. D.; the line will be approximately 200 miles long; some preliminary work done about a year ago; the W. K. Palmer Co., Engineers, 717-720 Dwight Bldg., Kansas City, Mo., engaged to make complete final location of line and to take charge of all engineering work connected with proposed railway.

Topeka, Kan.—City has decided to condemn the land along south bank of the Kaw River and with county begin the construction of new earth dike at once.

New Orleans, La.—Board of Administration of Isaac Delgado Museum of Arts, 518 Iberville st., will open bids about Nov. 1 for erection of \$135,000 art building.—Leidenbaum & Marx, Chicago, Ill., Architects.

Baltimore, Md.—Council is considering \$15,000 appropriation for house of detention.

Lowell, Mass.—Committee on Appropriation is considering \$5,600 appropriation for auto patrol.

New Bedford, Mass.—Architect Bullard will prepare working plans for changes to be made in Weld st. police station.

Grand Rapids, Mich.—Board of Supervisors has voted \$5,000 additional for remodeling Detention Hospital building and \$2,500 for new home for juvenile delinquents.

Kansas City, Mo.—Need of public comfort station is being urged.

Great Falls, Mont.—B. Ferrell Hoyt, St. Paul, landscape architect, is preparing plans for 80-acre park, with artificial lake, which is to be used for irrigating a system of smaller parks in other parts of the city.

Montclair, N. J.—Essex County Park Commission will beautify Maple ave. tract at cost of \$60,000; park will have wading pool, sand courts and open air gymnasium, but no driveways.

Buffalo, N. Y.—Committee on Police of Aldermen has voted to approve plan to utilize small triangle north of police headquarters in Franklin st. for a garage for the department; approval also given to a plan to equip third precinct with a patent police signal system, at no cost to the city, for test.

New York, N. Y.—Sinking Fund Commission has approved plans for improvement of the water front along Harlem from 140th to 155th st.

New York, N. Y.—No bids for construction of Triborough-subway by private capital were received by the Public Service Commission.

New York, N. Y.—Department of Charities will soon ask bids for erection of \$60,000 industrial school on Randall's Island.—W. T. Flanagan, E. 26th st., Architect.

Rochester, N. Y.—City Engineer Edwin A. Fisher has begun to prepare specifications for refuse incinerating plant.

Syracuse, N. Y.—Architects Russell and King have submitted to Commissioner of Public Safety Hessler plans for detention quarters in connection with present police station at West Willow and N. Clinton sts.; plans have been rejected for erection of addition to city hospital.

Watervliet, N. Y.—Special committee has recommended erection of city hall.

Bismarck, N. D.—B. Terrell Hoyt, St. Paul, landscape architect is preparing plans for several long boulevards and a capitol approach consisting of park a block wide from depot to capitol.

Toledo, O.—Council has been asked by Service Director Cowell to direct him to advertise for bids for making contract for sale of street sweepings for period of five or ten years.

Toledo, O.—Erection of police station on East Side will soon be considered.

Woodsdale, O.—Council is asking for bids for removal of garbage for ensuing year.

Youngstown, O.—Council has passed ordinance to issue \$2,000 bonds for repairing crematory.

Frackville, Pa.—Architect W. D. Hill, Pottsville, has prepared plans for erection of jail for borough.

Johnstown, Pa.—Enlargement of city prison is being considered.

Nanticoke, Pa.—Architects Reilly and Schroeder have prepared plans for \$1,000 jail.

Philadelphia, Pa.—Council has adopted resolution authorizing the Joint Committee on Public Health and Charities to visit Pittsburg and Warren, Pa., and Massillon and Cleveland, O., for purpose of inspecting State institutions in order to secure data to be used in the construction of buildings for Philadelphia Hospital for the Insane and the Philadelphia Home for the Indigent or Almshouse.

Philadelphia, Pa.—City will erect public bath house at 732 Lombard st. Carl B. Zilenziger, Architect.

Philadelphia, Pa.—Park Board is considering plans by Architect John T. Windrim for erection of municipal convention hall.

Wilkes-Barre, Pa.—Architects Reilly and Schroeder have submitted plans for erection of station house in rear of city building.

York, Pa.—Bids will be asked at once for placing signs designating streets and alleys.

Providence, R. I.—Board of Aldermen has adopted a resolution presented by Joint Special Committee appointed for purpose, which provides for securing of plans and estimates of cost of construction of two public comfort stations.

Providence, R. I.—Council will consider establishment of covered public market place.

Westerly, R. I.—Town has decided to purchase site at Union and Broad sts. for erection of town hall.

De Leon, Tex.—Citizens have voted bonds for erection of city hall; work will begin at once.

Fort Worth, Tex.—Park Engineer Vin-nedge has submitted to Board park budget for ensuing year which calls for \$46,573.16; cottage for custodian at Trinity Park, one for Glenwood and one for Forest Park will cost \$1,000 each. In Davis Park and on Samuels av. the appropriations are mainly for replacing trees that have died during year; \$1,000 dam is recommended for Glenwood Park.

Burlington, Vt.—Erection of city hall is being considered.

Alexandria, Va.—Police Commissioner Robert S. Barrett has recommended installation of 16 telephone call boxes and patrol wagon.

Norfolk, Va.—Finance Committee is considering \$55,000 appropriation for police headquarters and precinct station building and \$1,600 for improving public parks.

Orillia, Ont., Can.—Town Council has adopted plan providing for municipally owned bathhouses along the entire C. P. R. esplanade from Main st. to park.

CONTRACTS AWARDED

Mobile, Ala.—To Home Dredging Co., for placing of 10-ft. apron and the bulkheading at city wharves, \$12,983.61.

Rockville, Conn.—Construction of a new retaining wall on north side of Brooklyn st., to Richard Farrell, \$6 per cu. yd.

Boston, Mass.—Constructing concrete wall at Blackwood st., to Commonwealth Construction Co., 7 Congress st., \$1,150.

Lowell, Mass.—Gate to Edison Cemetery, to Gumb Bros., \$2,500.

Belleville, N. J.—Police Committee has decided to enter into contract with New York Telephone Co. for installation of a police call system.

Newark, N. J.—Annual contract to remove garbage and refuse from the market plaza, to Peter Druth, present contractor, \$1,745.

Perrysburg, N. Y.—Building incipient tuberculosis hospital, to C. A. Hager, Foster & Glidden Co. and Buffalo Electrical Co.; total, \$180,154.

Cincinnati, O.—Installing boilers in city hall, to Tudor Manufacturing Co., \$13,243.

Dallas, Tex.—Renumbering houses, to Stafford Bros., 15c. flat for each number.

Seattle, Wash.—Street flushing machines, to Pacific Coast Fire Supply Co., \$3,300 for three Connolly machines.

BIDS RECEIVED

San Jose, Cal.—Furnishing city with garbage incinerator: P. F. Dunlin, \$39,843; The Lilley-Thurston Company, \$19,000; Powers Specialty Company, \$40,000; Dixon Engineering and Construction Company, \$25,800; Dunlin people agreed to furnish three-cell incinerator for price stated in their bid and also made offer to rent such incinerator for \$497 per month, city to keep it covered with insurance of not less than \$10,000; Lilley-Thurston Company stated their incinerator was of Dixon type and had cap. of 50 tons per day of 15 hours; although it had been in use in Oakland for one year, it was guaranteed to be in first-class condition; Powers Specialty Company stated their incinerator had a 45-ton daily cap.; lease proposition called for annual rental of \$6,000, city to have option for its purchase after first year.

Chicago, Ill.—Construction of docks at the foot of Eastman st.: Great Lakes Dredge and Dock Co., Chicago, approximate length, 66 lin. ft., \$24.85 per ft., total \$1,640; Fitzsimons & Connell Co., approximate length, 66 lin. ft., \$26 per ft., total \$1,716.

New York, N. Y.—Erecting additional greenhouses in Botanical Gardens, Kelly & Kelly, Inc., 45 E. 42d st., \$23,725; W. J. Mertz, Glen ave., Port Chester, \$24,600; John B. Sheenan & Co., 1170 Broadway, \$23,700.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Louisiana.....	New Orleans.....	Oct. 31, 11 a.m.	Asphalt, bitulithic or other paving, sidewalks, etc., 4 streets..	Wm. J. Hardee, City Engineer.
Pennsylvania.....	Mt. Carbon.....	Oct. 31, 2 p.m.	Brick, bit. macadam, amiesite or other pav. 2,464 & 1,988 sq. yds.	State Highway Dept., Harrisburg.
New York.....	Bronxville.....	Nov. 1.....	Pav. Avon and Governor's rds.; Rogers & Latimer Engrs.....	Frank Dinsmore, Village Clerk.
Texas.....	Abilene.....	Nov. 1, 4 p.m.	Imp. and pav. three more blocks in business sec.; 3 materials..	J. A. Pratt, City Secretary.
New Jersey.....	Garwood.....	Nov. 1, 8 p.m.	Furn. and lay 650 lin. ft. blue stone sidewalk on South ave..	Jacob L. Bauer, C. E., Elizabeth.
Ohio.....	Toledo.....	Nov. 2.....	Grading and macadamizing 2.59 mi.; State rd, cost \$23,486..	State Hwy. Comr., C. of Co. Comrs.
Ohio.....	Cincinnati.....	Nov. 4, noon.	Brick paving, grading, limestone curb, drains, etc. Pogue ave..	John J. Wenner, Clk. Dir. Pub. Serv.
Ohio.....	Caldwell.....	Nov. 9.....	Brick paving and grading, 1.09 mi., Noble tp.; cost \$16,487..	State Hwy. Comr., C. of Co. Comrs.
Ohio.....	Chardon.....	Nov. 9.....	Brick paving and grading, 1 mi., Hampden tp.; cost \$11,897..	State Hwy. Comr., C. of Co. Comrs.
SEWERAGE				
Massachusetts.....	Boston.....	Oct. 28, noon.	Cleaning sewers in 8 sts., also Tenean Creek conduit.....	Louis K. Rourke, Supt. of Streets
New Jersey.....	South Amboy.....	Nov. 1, 8.30 p.m.	Bldg. sanitary sewers; 25,000 ft., 8-in.; 2,000 ft., 10-in.; 2,000 ft., 12-in., 1,000 ft., 15-in. clay pipe sewer; 200 manholes; 20 flush tanks, S. J. Mason, 102 Smith st., Perth Amboy	J. F. Fulton, City Clerk.
New York.....	Bronxville.....	Nov. 1.....	Bldg. 8-in. sewer in Avon road, paving, etc.; old bids rejected.	Rogers & Latimer, 5-7 E. 42d st. N.Y.
Illinois.....	Bloomington.....	Nov. 3.....	Constructing 12 and 30-in. pipe sewers in Clay st & Willard ave.	Elmer Folsom, City Engineer.
Ohio.....	Cleveland.....	Nov. 3, noon.	Bldg. drainage sewer around City Hall site; \$1,000 check guaranty.	A. B. Lea, Dir. Pub. Serv.
New York.....	Yorkville.....	Nov. 7, 4 p.m.	Bldg. sanitary system of sewers including 19,000 ft. of sewer, disposal plant, 33 manholes and 10 flush tanks, W. G. Stone, Mann Bldg., Utica, Engineer.....	W. Armstrong, Village Clerk.
Indiana.....	Richmond.....	Nov. 10.....	Bldg. 950 ft. 24-in. pipe sewer, small amount rock excavation..	Fred R. Charles, City Engineer.
WATER SUPPLY				
Pennsylvania.....	Harrisburg.....	Oct. 31, 3 p.m.	Erecting a pumping station, building only, in Reservoir Park..	City Water & Lighting Department.
Michigan.....	Bronson.....	Oct. 31, 7.30 p.m.	Furnishing material and constructing water works system....	Burt Walker, Village Clerk.
Michigan.....	Grand Rapids.....	Nov. 3, 8 p.m.	Chain grate stokers, etc., for comb. pump, and light station....	Henry J. Klevorn, Pres. Bd. P. Wks.
Pennsylvania.....	Saegertown.....	Nov. 4, 8 p.m.	Furn. 250 tons c. i. pipe, 10,000 lbs. specials; 28 fire hydrants, gate valves, boxes, etc.; bldg. conc. reservoir; lay. 3 mi. 4, 6 and 8-in. pipe; Witmer & Brown, Engrs., Buffalo, N. Y.	P. S. Davis, Burgess.
Kansas.....	Kinsley.....	Nov. 7, noon.	Furn. and lay 2,500 ft. 6-in. 11,250 ft. 4-in. c. i. pipe, eight 4-in. fire hydrants; ten 4-in. and two 6-in. valves; iron service boxes.....	P. A. Pearson, Mayor.
Minnesota.....	Jeffers.....	Nov. 8.....	Drilling an 8-in. well.....	J. W. Shaw, Village Recorder.
Washington.....	Spokane.....	Nov. 11.....	Completing Lincoln Heights reservoir; cost \$125,000.....	F. P. Weymouth, Pres. Bd. P. Wks.
LIGHTING AND POWER				
Michigan.....	Grand Rapids.....	Nov. 3, 8 p.m.	Two arc generators, dir-con. to motor, or six 50-light series rectifier systems, complete; also chain grate stokers for sta..	Saml. A. Freshney, Gen. Mgr., B. P.W.
MISCELLANEOUS				
Massachusetts.....	Boston.....	Oct. 28, noon.	Repairing Barney Dumping Scow No. 4.....	L. K. Rourke, Supt. Streets.
California.....	Pomona.....	Nov. 1, noon.	Erecting City Hall, bid on complete work or 11 separate items.	T. R. Trotter, City Clerk.
California.....	Oak Park.....	Nov. 1, 8 p.m.	Furn. comb. chemical and hose wagon, cap. 800 ft., 2.5-in. hose..	D. W. Taylor, Chm. Bd. Fire Comrs.
Michigan.....	Bay City.....	Nov. 2, 3 p.m.	Furn. 8-passenger automobile police patrol.....	E. E. Prohaska, City Comptroller.

STREET IMPROVEMENTS

New Orleans, La.—The Street and Landings Committee is considering paving of Orleans st. with rubber asphalt and to repave Royal st. with pitch lake asphalt.

Grand Rapids, Mich.—Kent County Supervisors have appropriated \$45,000 to be available for construction of good roads next year.

Cincinnati, O.—Committee on Streets has recommended improvement of Alice st. from Charlton st. to Daniels st., with macadam at cost of \$6,282; also Halpin Ave. from Linwood Ave. to Griest st., with macadam, \$10,878.

Cuyahoga Falls, O.—Bids will be received until noon, Oct. 28 for \$8,200 bonds for paving Front st.—C. N. Russell, Mayor.

Glard, O.—Number of streets will be paved; plans by Wm. Wilson, Elks Bldg., Youngstown. J. F. McFarlane, Village Clerk.

Brownwood, Tex.—Road District No. 1, Brown County, will vote Nov. 14 on \$100,000 additional road bonds.

Galveston, Tex.—City Commissioner Austin will purchase road-grading machine.

Port Lavaca, Tex.—City Commissioners have ordered grading and draining of portion of North st.

San Marcos, Tex.—Precinct No. 1 has defeated proposed \$20,000 road bond issue.

CONTRACTS AWARDED

Riverside, Cal.—Improving Lime st., to Star Cement Co., \$7,722.

Rochester, Minn.—Paving Broadway with creosote block, to Kettle River Quarries Co., \$62,354.

Olean, N. Y.—Paving W. Henley st., to Dunkirk Construction Co., \$35,000.

St. Johnsville, N. Y.—Completing highway improvement from St. Johnsville to East Creek, to Joseph Gonzales, Troy.

Zanesville, O.—Paving Locust st., to Adams Bros., \$5,134.

Tacoma, Wash.—Construction of cement sidewalks on North 19th and 21st sts., to Anton Warter, \$7,589; N. A. Jones bid \$8,510 and Erickson & Anderson, \$7,589.

BIDS RECEIVED

Cincinnati, O.—Paving Ludlow Ave. with wood blocks: Kirchner Construction Co., using the Republic oil, \$18,216; United States Wood Preserving Co., using its own oil, \$18,263.50; William Scully, Jr., & Bro., using Republic oil, \$19,169.60; same company, using oil of Kettle River Quarries Co., \$19,672.

SEWERAGE

Colusa, Cal.—Committee consisting of J. V. Balsdon, J. A. Eybel and L. Brown has been named to buy a tapping machine.

Plainville, Conn.—Establishment of sewer district is being considered.

Napa, Cal.—Bid of W. R. Berriman, \$1,184, for constructing proposed storm sewer along two blocks of Calistoga Ave. has been rejected. City shall at a later date, probably next Spring, lay about 1,500 ft. of 48-in. storm sewer in Lincoln Ave.; cost, \$3,000 to \$4,000.

Opelousas, La.—Board of Health has recommended establishment of sewer system.

Duluth, Minn.—City Engineering Department has estimated cost of the sewer system which has been petitioned for at Oneota, near West Duluth, at \$5,474.

Meridian, Miss.—City has sold \$50,000 drainage and \$10,000 sanitary sewerage bonds to Breede & Johnson, Cincinnati.

Hamilton, O.—Council has decided to construct sewer in Second st. North. E. G. Reeder, President of Council.

Pecos, Tex.—Citizens will vote Dec. 3 on \$25,000 bonds to install sewerage system.

CONTRACT AWARDED

Lancaster, O.—Building 3,250 ft. 24-in. sewer, to Jacob Clover, \$2,711.

Easton, Md.—Bids received Oct. 22 by Mayor Martin M. Higgins for building about 2,300 ft. 8 to 24-in. storm sewers, manholes, etc.: (A) Hines & Hayman, Annapolis; (B) Coryell Construction Co., Williamsport, Pa.; (C) Cantrell Construction Co., 2523 S. 5th St., Philadelphia, Pa.; (D) Irwin Bros., 330 N. Gay St., Baltimore.

Items	Calculation Basins	A	B	C	D
8 in. Pipe trenching, etc.....	840	\$0.58	\$0.42	\$0.50	\$0.55
10 in. Pipe trenching, etc.....	.....	.68	.52	.57	.70
12 in. Pipe trenching, etc.....	.....	.75	.68	.64	.90
15 in. Pipe trenching, etc.....	1415	.88	.78	.73	1.25
18 in. Pipe trenching, etc.....	925	1.30	1.10	.98	2.00
24 in. Pipe trenching, etc.....	.....	1.85	1.45	1.28	2.70
Iron per ton (2000 lbs).....	.....	40.00	35.00	60.00	40.00
Manholes, each complete.....	10	60.00	34.00	40.00	50.00
Lumber, if left per "B. M".....	.....	40.00	32.00	40.00	20.00
Per yard "Extra Concrete".....	.....	10.00	5.00	9.00	12.00
Catch Basins—complete.....	24	60.00	45.00	40.00	45.00
Totals.....		\$4975.90	\$3894.00	\$3719.45	\$5660.75

WATER SUPPLY

Oceanside, Cal.—Citizens have voted \$20,000 bonds for improving and extending water system.

Washington, D. C.—American consular officer in Latin-American country has forwarded pamphlets containing permanent specifications and conditions for the manufacture and delivery of c. i. pipes, sluice and other valves for water supply and stone-ware pipes. All pipes must be made strictly in accordance with the stipulations of these specifications. Address No. 5678, Bureau of Manufactures.

Adair, Ia.—Citizens have voted \$20,000 bonds for installation of water works.

Scandia, Kan.—Plans have been completed by J. S. Worley Co., Reliance Bldg., Kansas City, Mo., for proposed water works.

Branchville, N. J.—Citizens, under the leadership of State Senator Jacob C. Price, Dr. Edward A. Ayers, and D. L. B. Smith, have obtained option on a tract of land a short distance above the storage reservoir of present supply, with idea of erecting a reservoir for additional storage purposes.

Cranford, N. J.—Township Committee is investigating municipal water plants.

Las Cruces, N. M.—Installation of municipal water supply is being considered.

Cincinnati, O.—Expenditure of \$13,000 has been authorized to purchase pipe for water main to be laid in Ferguson Road.

Somerset, Pa.—Citizens will vote Nov. 26 on \$25,000 bonds for improvement of water works.

Dallas, Tex.—City Commission is considering extension of water mains on Madison Ave., Oak Cliff.

Eastland, Tex.—Construction of water works, cost \$15,000, is being considered.

Fort Worth, Tex.—City Commission has under consideration establishment of auxiliary pumping stations on South Side.

Ballinger, Tex.—Citizens have voted \$16,000 bonds for improving water works system.

Rogers, Tex.—Citizens have voted \$14,000 water works bonds; question of securing water works system will be taken up at once.

CONTRACTS AWARDED

Colusa, Cal.—To Brann, Williams & Russell to lay 6,460 ft. of pipe connecting water mains with flush tanks of the sewer system.

Osmond, Neb.—Building water works, to the Des Moines Bridge and Construction Co. Des Moines, Ia.

Dallas, Tex.—To Dimmick Pipe Co., for about 700 tons of 6, 8, 10 and 16-in. pipe; \$25.87 per ton for water pipe and \$49.75 for specials; air compressor, capable of 1,029 cu. ft. free air per min. under 100 lbs. pressure, to Smith & Whitney, \$2,000.

LIGHTING AND POWER

Berkeley, Cal.—In general plans for improvements, Council has ordered installation of fifteen additional arc lights in various sections of city.

Stanton, Ia.—Construction of electric light plant is being considered.

Escanaba, Mich.—Citizens will vote Nov. 8 on \$30,000 bonds for erection of gas plant.

Pine River, Minn.—Village Council has granted a franchise to H. A. and T. L. Arvig of this place to erect and maintain electric lighting plant.

Hannibal, Mo.—Citizens' Gas Co. will expend \$125,000 in improvements.—J. W. Thompson, President.

Chinook, Mon.—S. W. Swenson has been granted franchise for electric light plant.

Atlantic City, N. J.—Atlantic City Electric Company and the Atlantic Gas Company will contest for a five-year contract for the illumination of the Boardwalk; Council called for sample lighting displays, assuming that only electricity would be taken into consideration; gas company also provided display equal to most pretentious of electrical exhibits.

Graham, Va.—The Town Council accepted bid of the Graham Railway and Electric Company for franchise to construct and operate electric light plant, and to construct and operate electric railway in town.

Lexington, Va.—Report to Town Council from Special Committee, who have investigated conditions of service furnished by the Lexington Light and Power Co., provides for establishment of 200-horsepower steam plant, in addition to present water power plant, in order to adequately provide lights for the town and its citizens; six months is time named in which the improvement shall be made.

Monroe, Wis.—Power house of the Darlington Electric Light Company has been destroyed by fire; loss, \$10,000.

FIRE EQUIPMENT

Meridian, Mass.—City has sold \$15,000 fire department bonds to Breede & Johnson, of Cincinnati.

Kansas City, Mo.—Three of five new fire department houses to be constructed this Spring will be designed to contain motor car fire-fighting apparatus; plans being prepared.—Colin C. Egner, Fire Chief.

Billings, Mont.—Council will at once ask for bids for erection of proposed fire station at Thirtieth st. and Second Ave. Plans by Architect McAllister.

Port Lavaca, Tex.—Engine house will be erected at once.

Tyler, Tex.—The Chief of the Tyler Fire Department has been instructed to visit Dallas, Fort Worth and other Texas cities for the purpose of inspecting auto fire engines in service at those places with view to purchasing similar apparatus.

CONTRACTS AWARDED

Oakland, Cal.—To the United Iron Works for making street light, police and fire-box pedestals for the Fire Alarm and Police Telegraph Department, \$2,000.

Hibbing, Minn.—Furnishing one combination hose and chemical wagon to American-La France Fire Engine Co., \$1,800.

Rochester, N. Y.—Laying 5,000 ft. of eight conductor armored cable for the Fire Alarm System, to Standard Underground Cable Co., \$375.

BRIDGES

Port Huron, Mich.—Erection of bridge to connect Seventh and Military sts. is being considered.

Saginaw, Mich.—Supervisors have appropriated \$2,500 to repair bridge approaches to State road bridge.

Columbia, Mo.—Boone County has voted \$5,000 for building bridges.

Cincinnati, O.—New plans are being prepared by Bridge Engineer Frank Morris for proposed Gilbert Ave. viaduct; cost, about \$300,000.

Muskogee, Okla.—Citizens will vote Nov. 22 on \$140,000 bonds for bridges.

Green Bay, Wis.—City Engineer W. W. Reedwill has prepared preliminary plans for erection of bridge at Mason st.

CONTRACT AWARDED

York, Pa.—Building a concrete bridge over Muddy Creek Forks, near Brogueville, to George A. Wagman & Company, Dal-lastown, \$1,280; repair of the Dover bridge to make it a span of 34 instead of 15 ft., to Hartley, Ziegler Company, \$976.60; building stone arch bridge near Yocumtown, to Charles Witmer, \$763.

MISCELLANEOUS

Los Angeles, Cal.—Council has instructed Building Superintendent Backus to go ahead and draw plans and specifications for proposed city hall annex; building will be two stories in height, and will cost about \$15,000.

Washington, D. C.—American Consul in Levant has reported that date for submission of bids for proposed public works in his district has been postponed from Sept. 30 to Nov. 13. The works include construction of water works, electric tramways and electric light plant, sewers, and installation of telephone service between several cities in district. Address No. 5681, Bureau of Manufactures.

Bainbridge, Ga.—Erection of \$30,000 city hall is being considered.

New Albany, Ind.—Citizens of English, Crawford County, are interested in proposed straightening of Blue River.

Gloucester, Mass.—Plans are being prepared by Harbor and Land Commissioners for dredging and improving Lobster Cove; \$20,400 available.

Houghton, Mich.—Houghton County will erect \$75,000 jail and sheriff's residence.

Meridian, Miss.—City has sold \$15,000 bonds for improvement of Highland Park to Breede & Johnson, Cincinnati.

Buffalo, N. Y.—Council has passed \$100,000 bond issue for new buildings at Park Zoo.

CONTRACT AWARDED

Toledo, O.—Bidding as Toledo Improvement Co., James Rooney and the Brey-manns have been awarded contract for dredging Bay View park lagoons by the Board of Control.

STATE OF NEW JERSEY CIVIL SERVICE COMMISSION

New Jersey Civil Service examination (open to citizens of the State of New Jersey only) will be held at Trenton, N. J., on Wednesday, November 16, 1910, as follows:

Sanitary Inspector, State Board of Health, Trenton, N. J. Salary, \$1,200 to \$1,500 per annum. Applicants must be under 35 years of age. (One vacancy.)

Assistant Chemist (Division of Sewerage and Water Supplies)—State Board of Health, Trenton, N. J. Salary, \$960 to \$1,500 per year. (Three vacancies.) Applicants must be at least 20 and not over 30 years of age.

Sanitary Engineer (Division of Sewerage and Water Supplies)—State Board of Health, Trenton, N. J. Salary, \$1,200 to \$1,800 per year. (One vacancy.) Applicants must be at least 20 and not over 35 years of age.

Candidates for the above positions should file their applications with the Civil Service Commission, State House, Trenton, N. J., not later than noon, Saturday, November 12, 1910. For further information and application blanks, address Gardner Colby, Chief Examiner and Secretary, Civil Service Commission, State House, Trenton, N. J.

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PROPOSALS

SEWER SYSTEM

Carthage, Ohio.

Sealed bids will be received by Lewis Hall, Clerk of the Village of Carthage, State of Ohio, at the Office of said Clerk until twelve o'clock noon, November 8th, 1910, for furnishing the necessary labor and materials for the construction of the entire system of sanitary sewers for said Village, according to the plans and specifications on file in the office of Lewis Hall, Village Clerk, and Clinton Cowen, Village Engineer.

Each bid must contain the full name of every person or company interested in the same and be accompanied by a bond in the sum of one thousand (\$1,000) dollars, or a certified check on some solvent bank, as a guaranty that if the bid is accepted a contract will be entered into and its performance properly secured.

Should any bid be rejected such check will be forthwith returned to the bidder, and should any bid be accepted such check will be returned upon the proper execution and securing of the contract.

Bidders are required to use the printed forms which will be furnished on application.

The right is reserved to reject any and all bids.

By order of the Council of the Village of Carthage.

LEWIS HALL,
Clerk.

SEWER SYSTEM

Roseville, Cal.

Bids are called for on November 7th for a complete sewer system, consisting of septic tank, contact beds, and 42,275 ft. of 6", 2,640 ft. of 8", 13,151 ft. of 10" and 9,984 ft. of 12" vitrified pipe.

J. H. STINEMAN,
City Clerk.

BRIDGE.

Springfield, Mo.

Sealed bids will be received by the City Engineer of the City of Springfield, Missouri, until 8 o'clock p. m., Friday, October 28, 1910, for the construction of a 30-foot arch concrete bridge across Jordan Creek on Boonville Street, as per plans and specifications now on file in the City Engineer's office.

To be paid for out of the Current Expense Fund of said City.

Each bidder will be required to submit with his bid a certified check, payable to the City Treasurer, for 10 per cent of the

Right reserved to reject any and all bids.

H. G. HORTON, C. E.

SEWAGE DISPOSAL PLANT

Atlanta, Ga.

Sealed proposals for furnishing all labor and material and constructing the Proctor Creek Sewage Disposal Plant near Atlanta, Ga., will be received at the office of the Mayor of the City of Atlanta until 12 o'clock noon November 1, 1910, in accordance with the plans and specifications on file in the City Engineer's office, Atlanta, Ga., and in the office of Messrs. Hering & Fuller, Consulting Engineers, 170 Broadway, New York. Plans and specifications will be furnished to bidders upon the deposit of twenty-five (\$25) dollars, which will be held until the return of the plans and specifications. A certified check for five thousand (\$5,000) dollars must accompany each bid, which will be forfeited to the city in the event the contractor to whom the work is awarded fails to sign the contract within the prescribed time. The checks of unsuccessful bidders will be returned on the signing of the contract. The Engineer's estimate of the work is approximately one hundred thousand (\$100,000) dollars.

The right is reserved to reject any or all bids.

R. M. CLAYTON,
City Engineer.

Atlanta, Ga., September 30, 1910.

ELECTRIC LIGHT BONDS

Coleman, Tex.

The City of Coleman, Tex., now has ready for delivery \$20,000 worth of electric light improvement bonds, dated July 1, 1910, 5-40s, bearing 5 per cent interest; interest payable semi-annually. Write for financial statement and other particulars to F. A. DIBRELL, City Secretary, Coleman, Tex.